

- (iii) Work at a furnace where the treatment of zinc ores is carried on;
 - (iv) The cleaning of work rooms where the process mentioned in (iii) is carried on.
 - (b) No person under 18 years of age shall be employed in a chrome process or in anitro or amino process or in a process in which the following materials are used or where the vapour of such materials is given off; Carbonbisulphide, chloride of sulphur, benzene, carbontetrachloride, trichloroethylene, any carbon, chlorine compound, or any mixture containing any of such materials.
- 7. Duties of Employees—** Every person employed — (a) In a process to which Rule 33 apply shall wear the protective clothing, footwear, respirators, goggles or gloves provided under Rule 33 and shall deposit over all sorsuits or working clothing so provided, as well as clothing put off during working hours, in the place provided under Rule 34.
- (b) In processes to which rule 35 applies shall carefully wash the hands and face before par taking of any food or leaving the premises;
 - (c) In any process to which Part II of these rules applies shall use protective appliances supplied in respect of any process in which he is engaged.

SCHEDULE VI(L)

[See rule 55]

PRINTING PRESSES AND TYPE FOUNDRIES AND CERTAIN LEAD PROCESSES CARRIED THEREIN

1. Exemption — Where the Chief Inspector-cum-facilitator is satisfied that all or any of the provisions of the Schedule are not necessary for the protection of persons employed he/she may by certificate in writing exempt any factory from all or any of such provisions subject to such conditions as he/she may specify therein. Such certificate may at any time be revoked by the Chief Inspector-cum-facilitator.
2. Definitions — In these regulations — “Lead material” means materials containing not less than five percent of lead;
- “Lead process” means — (a) the melting of lead or any lead material for casting and mechanical composing; and
- (b) the recharging of machines with used lead material; or
 - (c) any other work including removal of dross from melting pots, cleaning of plungers; and
 - (d) manipulation, movement or other treatment of lead material.
- “Efficient exhaust draught” means localised ventilation effected by heat or mechanical means, for the removal of gas, vapour, dust or fumes so as to prevent them from escaping into the air of any place in which work is carried on. No draught shall be deemed efficient which fails to remove gas, vapour, fume or dust at the point where they originate.

3. Exhaust Draught— None of the following processes shall be carried on except with an efficient exhaust draught — (a) melting lead material or slugs;
(b) heating lead material so that vapour containing lead is given off; or, unless carried on in such a manner as to prevent free escape of gas, vapour, fumes or dust into any place in which work is carried on or, unless carried on in electrically heated and thermostatically controlled melting pots; Such exhaust draught shall be effected by mechanical means and so contrived as to operate on the dust, fume, gas or vapour given off as closely as may be at its point of origin.
4. Prohibition Relating to Women and Young Persons— No women or young person shall be employed or permitted to work in any lead process.
5. Separation of certain processes— Each of the following processes shall be carried on in such a manner and under such conditions as to secure effectual separation from one another and from any other process — (a) Melting of lead or any lead material;
(b) Casting of lead ingots;
(c) Mechanical composing.
6. Container for Dross — A suitable receptacle with tightly fitting cover shall be provided and used for dross as it is removed from every melting pot. Such receptacle shall be kept covered while in the work-room near the machine except when the dross is being deposited therein.
7. Floor of Work-Room — The floor of every work-room where lead process is carried on shall be — (a) Of cement or similar material so as to be smooth and impervious to water;
(b) Maintained in sound condition; and
(c) Shall be cleaned throughout daily after being thoroughly damped with water at a time when no other work is being carried on at the place.
8. Mess-Room — There shall be provided and maintained for the use of all persons employed in a lead process and remaining on the premises during the meal intervals, a suitable mess-room which shall be furnished with sufficient tables and benches.
9. Washing Facilities — There shall be provided and maintained in a cleanly state and in good repair for the use of all person employed in a lead process—
(a) a wash place with either — (i) a trough with a smooth impervious surface fitted with a waste pipe without plug; and of sufficient length to allow at least 60 Centimeters for every five such persons employed at any one time and having a constant supply of water from taps or jets above the trough at intervals of not more than 60 Centimeters; or
(ii) at least one wash basin for every five such persons employed at any one time, fitted with a waste pipe and plug and having an adequate supply of water laid on or always readily available; and
(b) a sufficient supply of clean towels made of suitable material renewed daily with a sufficient supply of soap or other suitable cleansing material.
10. Medical Examination—(a) Every person employed in lead process shall be examined by the Medical Officer within 14 days of his first employment in such processes and thereafter shall be examined by the Medical Officer at intervals of not more than 3 months, and a record of such examination shall be entered by the Medical Officer in the special certificate of fitness in **the prescribed format**;

FORMAT

Special certificate of fitness

(In respect of persons employed in operations involving use of lead compounds)

Serial No.....

Date.....

I hereby certify that I have personally examined.....son of.....residing at.....who is desirous of being employed as.....in the.....and that his age, as nearly as can be ascertained from my examination is..... years, and that he is, in my opinion fit for employment at work involving the use of lead compounds.

His descriptive marks are: Medical Officer Left thumb-impression of person examined:

(b) A Health Register containing names of all persons employed in any lead process shall be kept in **the prescribed format**;

FORMAT

Health Register

(In respect of persons employed in occupations declared to be dangerous operations under Section 87) Name of Certifying Surgeon :

(a) Mr..... From..... To

(b) Mr..... From..... To

(c) Mr..... From..... To

Serial No.	Works No.	Name of worker	Sex	Age (birth day)	Date of employment on present work	Date of leaving or transfer to other works	Reason for leaving, transfer or discharge	Nature of job or occupation	Raw material or by-product handled	Dates of Medical Examination by Certifying Surgeon	If suspended from work, state period of suspension with detailed reason	Recertified fit to resume duty on (with signature of Certifying Surgeon)	If certificate of unfitness or suspension issued to worker	Signature with date of Certifying Surgeon
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Note — (i) Column 8. Detailed summary of reasons for transfer or discharge should be stated
(i) Column 11. should be expressed as fit/unfit/suspended.

(c) No person after suspension shall be employed in a lead process without the written sanction from the Medical Officer, entered in the Health Register.

11. Food, Drinks, Etc., Prohibited in Work-Room — No food, drinks, pan and supari or tobacco shall be consumed or brought by any worker into any work room in which any lead process is carried on.

SCHEDULE VI(M)**[See rule 55]****COMPRESSION OF OXYGEN AND HYDROGEN PRODUCED BY THE ELECTROLYSIS OF WATER**

1. The room in which electrolyser plant is installed shall be separated from the plant for storing and compressing the oxygen and hydrogen and also the electric generator room.
2. The purity of oxygen and hydrogen shall be tested by a competent person at hourly intervals at the following points — (i) In the electrolyser room;
(ii) At the gas holder in-let; and
(iii) at the suction end of the compressor. The purity figures shall be entered and signed by the person carrying out such tests in the register:
Provided, however, that if the electrolyser plant is fitted with automatic recorder of purity of oxygen and hydrogen with alarm lights, it shall be sufficient if the purity of the gases is tested at hourly intervals at the suction end of the compressor only.
3. The oxygen and hydrogen gases shall not be compressed if their purity as determined under clause 2 above falls below 98 percent at any time.
4. There shall be at least two gas holders for each kind of gas compressed and the gas holder for same gas shall be provided with suitable arrangements to ensure that no gas holder is connected to the compressor and to the electrolyser at the same time, and only one gas holder is connected to the compressor line at any one time.
5. The bell of any gas holder shall not be permitted to go within 30 c.m. (12 inches) of its lowest position when empty, and a visual and an audible warning signal shall be fitted to the gas holder to indicate that this limit is reached.
6. The water and caustic soda used for making electrolytes shall be chemically pure within pharmaceutical limits.
7. Electrical connections at the electrolyser cells and at the electric generator terminals shall be so constructed as to preclude possibility of wrong connections leading to the reversal of polarity and in addition an automatic device shall be provided to cut off power in the event of reversal of polarity owing to wrong connections either at the switch board or at the electric generator terminals.
8. Oxygen and hydrogen gas pipes shall be painted with distinguishing colours and in the event of leakage at the joints of the hydrogen gas pipe, the pipe after reconnection shall be purged of all air before drawing in hydrogen gas.
9. All electrical wiring and apparatus in the electrolyser room shall be of flame-proof construction or enclosed in flame-proof fittings and no naked light or flame shall be allowed to be taken either in the electrolyser room or where compression and filling of the gases is carried on and such warning notices shall be exhibited in prominent places.
10. No part of the electrolyser plant and the gas holders and compressor shall be subjected to welding, brazing, soldering or cutting until steps have been taken to remove any explosive substance from that part and render the part safe for such operations and after the completion of such operations no explosive substances shall be allowed to enter that part until the metal has cooled sufficiently to prevent risk of explosion.
11. No work or operation, repair or maintenance shall be undertaken except under the direct supervision of a person who by his training, experience and knowledge of the necessary precautions against risk of explosion is competent to supervise such work. No

electric generator after erection or repairs shall be switched on to the electrolyzers unless the same is certified by the competent person under whose direct supervision erection or repairs are carried on to be in a safe condition and the terminals have been checked for the polarity as required by Rule 7.

12. Every part of the electrolyser plant and the gas holders and compressor shall have a regular schedule of overhaul and checking and every defect noticed shall be rectified forthwith.

SCHEDULE VI(N)

[See rule 55]

MANUFACTURE, HANDLING AND USE OF BENZENE AND SUBSTANCES CONTAINING BENZENE.

1. Application :- This schedule shall apply in respect of factories or parts thereof in which benzene or substances containing benzene are manufactured, handled or used.

2. Definitions :- For the purpose of this schedule - (a) "substances containing benzene" means substances wherein benzene content exceeds 1 per cent by volume ;

(b) "substitute" means a chemical which is harmless or less harmful than benzene and can be used in place of benzene ;

(c) "enclosed system" means a system which will not allow escape of benzene vapours to the working atmosphere ; and

(d) "efficient exhaust draught" means localised ventilation, effected by mechanical means for the removal of gases, vapours and dusts or fumes so as to prevent them from escaping into air of any workroom. No draught shall be deemed to be efficient if it fails to remove smoke generated at the point where such gases, vapours, fumes or dusts originate.

3. Prohibition and substitutions : (1) Use of Benzene and substances containing benzene, is prohibited in the following process :- (a) Manufacture of varnishes, paints and thinners ; and

(b) Cleaning and degreasing operations.

(2) Benzene or substances containing benzene shall not be used as a solvent or diluent unless the process in which it is used is carried on in an enclosed system or unless the process is carried on in a manner which is considered equally safe as if it were carried out in an enclosed system.

(3) Where suitable substitutes are available, they shall be used instead of benzene or substances containing benzene. This provision, however shall not apply to the following process :-

(a) production of benzene ;

(b) process where benzene is used for chemical synthesis ; and

(c) motor spirits (used as fuel)

(4) The Chief Inspector-cum-facilitator may, subject to confirmation by the State Government, permit exemptions from the percentage laid down in sub-paragraph 2(a) and also from the provisions of sub-paragraph (3) of this paragraph temporarily under conditions and within limits of time to be determined after consultation with the employers and workers concerned.

4. Protection against inhalation.- (1) The process involving the use of benzene or substances containing benzene shall as far as practicable be carried out in an enclosed system.

(2) Where, however, it is not practicable to carry out the process in an enclosed system, the workroom in which benzene or substances containing benzene are used shall be equipped with an efficient exhaust draught or other means for the removal of benzene vapours to prevent their escape into the air of the workroom so that the concentration of benzene in the air does not exceed 10 parts per million by volume or 30 milligrams per cubic meter.

(3) Air analysis for the measurement of concentration of benzene vapours in air shall be carried out every 8 hours or at such intervals as may be directed by the Chief Inspector at places where process involving use of benzene is carried on and the result of such analysis shall be recorded in a register specially maintained for this purpose. If the concentration of benzene vapours in air as measured by air analysis, exceeds 10 parts per million by volume or 30 milligrams per cubic meter, the Manager shall forthwith report the concentration to the Chief Inspector stating the reasons for such increase.

(4) Workers who for special reasons are likely to be exposed to concentration of benzene in the air of the workroom exceeding the maximum referred to in subparagraph (2) shall be provided with suitable respirator or face masks. The duration of such exposure shall be limited as far as possible.

5. Measures against skin contact. - (1) Workers who are likely to come in contact with liquid benzene or liquid substances containing benzene shall be provided with suitable gloves, aprons, boots and where necessary-vapour tight chemical goggles, made of materials not effected by benzene or its vapours.

(2) The protective wear referred to in sub-paragraph (1) shall be maintained in good condition and inspected regularly.

6. Prohibition relating to employment of women and young persons. No women or young person shall be employed or permitted to work in any workroom involving exposure to benzene or substances containing benzene.

7. Labelling :- Every container holding benzene or substances containing benzene shall have the word "Benzene" and approved danger symbols clearly visible on it and shall also display information on benzene content warning about toxicity and warning about inflammability of the chemical.

8. Improper use of benzene:- (1) The use of benzene or substances containing benzene by workers for cleaning their hands or their work clothing shall be prohibited. (2) Workers shall be instructed on the possible dangers arising from such misuse.

9. Prohibition of consuming food, etc. in workroom:- No worker shall be allowed to store or consume food or drink in the workroom in which benzene or substances containing benzene are manufactured, handled or used. Smoking and chewing tobacco or pan shall be prohibited in such workrooms.

10. Instructions as regards risks:- Every workers on his first employment shall be fully instructed on the properties of benzene or substances containing benzene which he has to handle and of the dangers involved. Workers shall also be instructed on the measures to be taken to deal with in an emergency.

11. Cautionary notices:- Cautionary notices in the form specified in appendix and printed in the language easily read and understood by the majority of the workers shall be displayed in prominent places in the workrooms where benzene or substances containing benzene are manufactured, handled or used.

12. Washing facilities, cloakroom and messroom :- In factories in which benzene or substances containing benzene are manufactured, handled or used, the occupier shall provide and maintain in a clean state and in good repair - (a) Washing facilities under cover, of the standard of at least one tap for every 10 persons having constant supply of water with soap and a clean towel provided individually to each worker if so ordered by the Inspector ;

(b) A cloakroom with lockers for each worker, having two compartments one for street-clothing and one for work-clothing; and

(c) a messroom furnished with tables and benches with means for warming food, provided that where a canteen or other proper arrangements exist for the workers to take their meals, the requirements of messroom shall be dispensed with.

13. Medical examination:- (1) Every worker who is to be employed in processes involving use of benzene or substances containing benzene, shall undergo. (a) a thorough pre-employment medical examination including a blood test for fitness for employment by a **Medical officer**; and

(b) periodical medical examination including blood test and other biological tests at intervals of every 6 months by the factory medical officer with the assistance of a laboratory.

(2) Certificates of pre-employment medical examination and periodical medical examination including test shall be entered in a health register in **the prescribed format**, which shall be produced on demand by an Inspector. (3) (a) If the factory medical officer on examination at any time is of the opinion that any worker has developed signs symptoms of benzene exposure, he shall make a record of his findings in the said register and inform the manager in writings.

FORMAT
Health Register

(In respect of persons employed in occupations declared to be dangerous operations under Section 87) Name of Certifying Surgeon :

(a) Mr..... From..... To.....

(b) Mr..... From..... To.....

(c) Mr..... From..... To.....

Serial No.	Works No.	Name of worker	Sex	Age (birth day)	Date of employment on present work	Date of leaving or transfer to other works	Reason for leaving, transfer or discharge	Nature of job or occupation	Raw material or by-product handled	Dates of Medical Examination by Certifying Surgeon					If suspended from work, state period of suspension with detailed reason	Recertified fit to resume duty on (with signature of Certifying Surgeon)	If certificate of unfitness or suspension issued to worker	Signature with date of Certifying Surgeon
1	2	3	4	5	6	7	8	9	10	Result of Medical Examination								
										11					12	13	14	15

Note — (i) Column 8. Detailed summary of reasons for transfer or discharge should be stated
(i) Column 11. should be expressed as fit/unfit/suspended.

(b) on receipt of the information from the factory medical officer, the manager of the factory shall sent the worker so found exposed, to the Medical Officer who shall, after satisfying himself with the findings of the factory medical officer and conducting necessary examinations, issue orders of temporary shifting of the worker or suspension of the worker in the process.

(4) The medical examination shall be arranged by the occupier or manager of the factory and the worker so examined shall not bear any expenses for it.

APPENDIX

CAUTIONARY NOTICE BENZENE AND SUBSTANCES CONTAINING BENZENE

1. Hazards: (a) Benzene and substances containing benzene are harmful.
- (b) Prolonged or repeated breathing of benzene vapours may result in acute or chronic poisoning.
- (c) Benzene can also be absorbed through skin which may cause skin and other diseases.
2. Preventive measures: (a) Avoid breathing of benzene vapours. (b) Avoid prolonged or repeated contact of benzene with the skin. (c) Remove benzene soaked or wet clothing promptly.
- (d) If any time you are exposed to high concentration of benzene vapours and exhibit signs and symptoms such as dizziness, difficulty in breathing, excessive excitation and losing of consciousness, immediately inform your factory manager.

(e) Keep all the containers of benzene closed.

(f) Handle, use and process benzene and substances containing benzene carefully in order to prevent their spillage on floor.

(g) Maintain good housekeeping.

3. Protective equipment: (a) Use respiratory protective equipment in places where benzene vapours are present in high concentration.

(b) In emergency, use self generating oxygen mask or oxygen or air cylinder masks.

(c) Wear hand gloves, aprons, goggles and gum boots to avoid contact of benzene with your skin and body parts.

4. First aid measures in case of acute benzene poisoning : (a) Remove the clothing immediately if it is wetted with benzene.

(b) If liquid benzene enters eyes, flush thoroughly for at least 15 minutes with clean running water and immediately secure medical attention.

(c) In case of unusual exposure to benzene vapour, call a physician immediately. Until he arrives, do the following :-

(i) If the exposed person is conscious -(aa) Move him to fresh air in open. (bb) Lay down without a pillow and keep him quiet and warm.

(ii) If the exposed persons is unconscious - (aa) Lay him down preferably on the left side with the head low. (bb) Remove any false teeth, chewing-gum, tobacco or other foreign objects which may be in his mouth. (cc) Provide him artificial respiration in case difficulty is-being experienced in breathing. (dd) In case of shallow breathing or cyanosis (blueness of skin, lips, ears, finger nail beds), he/she should provided with medical oxygen or oxygen carbon dioxide mixture. If needed, he/she should be given artificial respiration. Oxygen should be administered by a trained person only.

SCHEDULE VI(O)
[See rule 55]

**PROCESS OF EXTRACTING OILS AND FATS FROM VEGETABLES AND ANIMAL SOURCES
IN SOLVENT EXTRACTION PLANTS**

1. Definitions :- For the purposes of this Schedule :-

(a) "Solvent extraction plant" means a plant in which the process of extracting oil and fats from vegetable and animal sources by use of solvents is carried on.

(b) "Solvent" means an inflammable liquid such as pentane, hexane and heptanes used for the recovery of vegetable oil.

(c) "flameproof enclosure" as applied to electrical machinery or apparatus means an enclosure that will with-stand when covers or other access doors are properly secured an internal explosion of the flammable gas or vapour which may enter or which may originate inside the enclosure without suffering damage and without communicating internal inflammation or explosion to the external flammable gas or vapour.

(d) "competent person" for the purpose of this schedule shall be at least a member of the Institution of Engineers (India) or an Associate Member of the said Institution with 10 years experience in a responsible position as may be approved by the Chief Inspector-cum-facilitator.

Provided that a graduate in mechanical engineering or chemical technology with specialised knowledge of oil and fats and with a minimum experience of 5 years in a solvent extraction plant shall also be considered to be competent person :

Provided further that the State Government may accept any other qualifications if in its opinion they are equivalent to the qualifications aforesaid.

2. Location and layout:- (1) No solvent extraction plant will be permitted to be constructed or extended within a distance of 30 meter from the nearest residential locality.

(2) A 1.5 metre high continuous wire fencing shall be provided around the solvent extraction plant up to a minimum distance of 1.5 metres from the plant.

(3) No person shall be allowed to carry any matches or an open flame or fire inside the areas bound by the fencing.

(4) Boiler houses and other buildings where open flame processes are carried on shall be located at least 30 meters away from the solvent extraction plant.

(5) If godown or preparatory processes are at a distance of less than 30 meters from the solvent extraction plant there shall be at least 15 metres distance from the plant and a continous barrier wall of noncombustible material 1.5 metres high shall be erected at a distance of not less than 15 metres from the solvent extraction plant so that it extends to at least 30 metres of vapourtraval around its ends from the plant to the possible source of ignition.

3. Electrical Installations : (1) All electrical motors and wiring and other electrical equipment installed for house in solvent extraction plant shall be of flameproof construction.

(2) All metal parts of the plant and building including various tanks and containers where solvents are stored or are present and all parts of electrical equipments not required to be energized shall be properly bonded together and connected to earth so as to avoid accidental rise in the electrical potential of such parts above the earth potential.

4. Restriction on smoking :- Smoking shall be strictly prohibited within 15 metres distance from solvent extraction plant. For this purpose, "No smoking" signs shall be permanently displayed in the area.

5. Precautions against friction :- (1) All tools and equipment including ladders, chains and other lifting tackle required to be used in solvent extraction plant shall be of non-sparking type.

(2) No machinery or equipment in solvent extraction plant shall be belt driven.

(3) No person shall be allowed to enter and work in the solvent extraction plant if wearing clothes made of nylon or such other fibre that can generate static electrical charge or wearing footwear which is likely to cause sparks by friction.

6. Fire fighting apparatus :- (1) Adequate number of portable fire extinguishers suitable for use against flammable liquid fires shall be provided in the solvent extraction plant.

(2) An automatic water spray sprinkler system on a wet pipe or open head deluge system with sufficient supply of storage water shall be provided over solvent extraction plant and throughout the building housing such plant.

7. Precautions against power failure:- Provision shall be made for the automatic cutting off of steam in the event of power failure and also for emergency over head water supply for feeding water by gravity to condensers which shall come into play automatically with the power failure.

8. Magnetic separators:- Oil cake shall be fed to the extractor by conveyer through a hopper and magnetic separator shall be provided to remove any pieces of iron during its transfer.

9. Venting:- (1) Tanks containing solvents shall be protected with emergency venting to relieve excessive internal pressure in the event of fire.

(2) All emergency relief vents shall terminate at least 6 metres above the ground and be so located that vapours will not re-enter the building in which solvent extraction plant is located.

10. Waste water :- Process waste water shall be passed through a flash evaporator to remove any solvent before it is discharged into a sump which should be located within the fenced area but not closer than 8 metres to the fence.

11. Ventilation :- The solvent extraction plant shall be well ventilated and if the plant is housed in a building the building shall be provided with mechanical ventilation with provision for at least six air changes per hour.

12. House keeping :- (1) Solvents shall not be stored in an area covered by solvent extraction plant except in small quantities which shall be stored in approved safety cans

(2) Waste, materials such as oily rags, other wastes and absorbents used to wipe off solvent and paints and oil shall be deposited in approved containers and removed from the premises at least once a day.

(3) Space within the solvent extraction plant and within 15 metres from the plant shall be kept free from combustible materials and any spills of oil or solvent shall be cleaned up immediately.

13. Examination and Repairs :- (1) The solvent extraction plant shall be examined by the competent person to determine any weakness or corrosion and wear once in every 12 months. Report of such examination shall be supplied to the Inspector with his observation as to whether or not the plant is in safe condition to work.

(2) No repairs shall be carried out to the machinery or plant except under the direct supervision of the competent person.

(3) Facility shall be provided for purging the plant with inert gas or steam before opening for cleaning or repairs and before introducing solvent after repairs.

14. Operating personnel :- The operation of the plant and machinery in the solvent extraction plant shall be in the charge of such duly qualified and trained persons as are certified by the competent person to be fit for the purpose and no other person shall be allowed to operate the plant and machinery.

15. Employment of women and young persons:- No women or young person's shall be employed in the solvent extraction plant.

16. Vapour detection :- Suitable type of flameproof and portable combustible gas indicator shall be provided and maintained in good working order and a schedule of routine sampling of atmosphere at various locations as approved by the chief Inspector-cum-facilitator shall be drawn out and entered in a register maintained for the purpose.

SCHEDULE VI(P)

[See rule 55]

MANIPULATION OF STONE OR ANY OTHER MATERIAL CONTAINING FREE SILICA

1. Application — This Schedule shall be applied to all factories or parts of factories in which manipulation of stone or any other material containing free silica is carried on.

2. Definitions — For the purpose of this Schedule — (a) “manipulation” means crushing, breaking, chipping, dressing grinding, sieving, mixing, grading or handling of stone or any other material containing free silica or any other operation involving such stone or material;

(b) “stone or any other material containing free Silica” means a stone or any other solid material containing not less than 5% by weight of free silica.

3. Precautions in manipulation — No manipulation shall be carried out in a factory or part of a factory unless one or more of the following measures, namely —

(a) damping the stone or other material being processed;

(b) providing water spray;

(c) enclosing the process;

(d) isolating the process; and

(e) providing localised exhaust ventilation; are adopted so as to effectively control the dust in any place in the factory where any person is employed, at a level equal to or below the maximum permissible level for silica dust as laid down in **Table - 2 appended to Rule - 128 of Model Rule.**

Provided that such measures as above are not necessary if the process or operation itself is such that the level of dust created and prevailing does not exceed permissible level referred

4. Maintenance of Floors— (1) All floors or places where fine dust is likely to settle on and where on any person has to work or pass shall be of impervious material and maintained in such condition that they can be thoroughly cleaned by a moist method or any other method which would prevent dust being air borne in the process of cleaning.

(2) The surface of every floor of every work room or place where any work is carried on or where any person has to pass during the course of his work shall be cleaned of dust once at least during each shift after being sprayed with water or by any other suitable method so as to prevent dust being airborne in the process of cleaning.

5. Prohibition relating to young persons — No young person shall be employed or permitted to work in any of the operations involving manipulation or at any place where such operations are carried out.

6. Medical facilities and records of examination and tests — (1) The occupier of every factory to which the Schedule applies shall —

(a) employ a qualified medical officer for medical surveillance of the workers employed therein whose employment shall be subject to the approval of the Chief Inspector of Factories and

(b) Provide to the said medical officer all the necessary facilities for the purpose referred to in clause (1). (2) The record of medical examination and appropriate tests carried out by the said medical officer shall be maintained in a separate register approved by the Chief Inspector of Factories, which shall be kept readily available for inspection by the Inspector.

7. Medical examination by **Medical officer** — (1) Every worker employed in the processes specified in paragraph 1 shall be examined by a **Medical officer** within 15 days of his first employment. Such medical examination shall include pulmonary function tests and chest X-ray. No worker shall be allowed to work after 15 days of his first employment in the factory unless certified fit for such employment by the Medical Officer.

(2) Every worker employed in the said processes shall be re-examined by a **Medical officer** at least once in every twelve months. Such examination shall, wherever the **Medical officer** considers appropriate, include all the tests as specified in sub-paragraph (1) except chest X-ray which will be once in 3 years.

(3) The **Medical officer** after examining a worker, shall issue a Certificate of Fitness in **the prescribed format (I) hereinbelow**. The record of re-examinations carried out shall be entered in the certificate and the certificate shall be kept in the custody of the Manager of the Factory. The record of each examination carried out under sub-paragraphs (1) and (2), including the nature and the results of the tests, shall also be entered by the Medical Officer in a health register in **the prescribed format(II) hereinbelow**.

FORMAT(I)
Certificate of Fitness

Serial Number:

I certify that I have personally examined (name) son
of (father's name) residing at (address)
who is desirous of being employed as (designation) in
(process, department and factory)
and that his age, as nearly as can be ascertained from any examination, is years, and that he is, in
my opinion, fit/unfit for employment in the above mentioned factory as mentioned above.

2. He may be produced for further examination after a period of

3. The serial number of the previous certificate is

Signature or left hand thumb impression
of person examined

Signature of Medical Officer

Date:

1	2	3	4
I certify that I have examined the persons mentioned above on	I extend this Certificate until (If Certificate is not extended, the period for which the worker is considered unfit for work is to be mentioned)	Signs and symptoms observed during examination	Signature of the Medical Officer.

FORMAT(II)

Health Register

(In respect of persons employed in occupations declared to be dangerous operations under Section 87) Name of Certifying Surgeon :

(a) Mr..... From..... To

(b) Mr..... From..... To

(c) Mr..... From..... To

Serial No.	Works No.	Name of worker	Sex	Age (birth day)	Date of employment on present work	Date of leaving or transfer to other works	Reason for leaving, transfer or discharge	Nature of job or occupation	Raw material or by-product handled	Dates of Medical Examination by Certifying Surgeon						If suspended from work, state period of suspension with detailed reason	Recertified fit to resume duty on (with signature of Certifying Surgeon)	If certificate of unfitness or suspension issued to worker	Signature with date of Certifying Surgeon
1	2	3	4	5	6	7	8	9	10	11						12	13	14	15

Note — (i) Column 8. Detailed summary of reasons for transfer or discharge should be stated

(i) Column 11. should be expressed as fit/unfit/suspended.

(4) The certificate of Fitness and the health register shall be kept readily available for inspection by the Inspector-cum-facilitator.

(5) If at any time the **Medical officer** is of the opinion that a worker is no longer fit for employment in the said processes on the ground that continuance therein would involve special danger to the health of the worker, He/She shall make a record of his findings in the said certificate and the health register. The entry of his findings in those documents should also include the period for which he considers that the said person is unfit for work in the said processes.

(6) No person who has been found unfit to work as said in sub-paragraph (5) above shall be re-employed; or permitted to work in the said processes unless the **Medical officer**, after further examination, again certifies him fit for employment in those processes.

8. Exemptions— If in respect of any factory, the Chief Inspector-cum-facilitator is satisfied that owing to the exceptional circumstances or in-frequency of the processes or for any other reason, all or any of the provisions of this schedule is not necessary for protection of the workers in the factory, the Chief Inspector-cum-facilitator may by a certificate in writing, which he/she may in his discretion revoke at any time, exempt such factory from all or any of such provisions subject to such conditions, if any, as he/she may specify therein.

SCHEDULE VI(Q)
[See rule 55]

HANDLING AND PROCESSING OF ASBESTOS, MANUFACTURE OF ANY ARTICLE OF ASBESTOS, AND ANY OTHER PROCESS OF MANUFACTURE OR OTHERWISE IN WHICH ASBESTOS IS USED IN ANY FORM

1. Application — This Schedule shall apply to all factories or parts of factories in which any of the following processes is carried on —

- (a) breaking, crushing, disintegrating, opening, grinding, mixing or sieving of asbestos and any other processes involving handling and manipulation of asbestos incidental thereto;
- (b) all process in the manufacture of asbestos textiles including preparatory and finishing processes;
- (c) making of insulation slabs or sections, composed wholly or partly of asbestos, and processes incidental thereto;
- (d) making or repairing of insulating mattresses, composed wholly or partly of asbestos, processes incidental thereto;
- (e) manufacture of asbestos cardboard and paper;
- (f) manufacture of asbestos cement goods;
- (g) application of asbestos by spray method;
- (h) sawing, grinding, turning, abrading and polishing in dry state of articles composed wholly or partly of asbestos;
- (i) cleaning of any room, vessel, chamber, fixture or appliance for the collection of asbestos dust; and
- (j) any other processes in which asbestos dust is given off into the work environment.

2. Definition — For the purpose of this Schedule — (a) “asbestos” means any fibrous silicate mineral and any admixture containing actinolite, amosite, anthophyllite, dthrysotile, crocidolite, tremolite or any mixture thereof, whether crushed or opened;

(b) “asbestos textiles” means yarn or cloth composed of asbestos or asbestos mixed with any other material;

(c) “approved” means approved for the time being in writing by the Chief Inspector-cum-facilitator;

(d) “breathing apparatus” means a helmet or face piece with necessary connection by means of which a person using it breathes air free from dust, or any other approved apparatus;

(e) “efficient exhaust draught” means localised ventilation by mechanical means for the removal of dust so as to prevent dust from escaping into air of any place in which work is carried on. No draught shall be deemed to be efficient which fails to control dust produced at the point where such dust originates;

(f) “preparing” means crashing, disintegrating, and any other processes in or incidental to the opening of asbestos;

(g) “protective clothing” means overalls and head covering which (in either case) will when worn exclude asbestos dust.

3. Tools and Equipment— (1) Any tools or equipment used in processes to which this Schedule applies shall be such that they do not create asbestos dust above the permissible limit or are equipped with efficient exhaust draught.

4. Exhaust draught— (1) An efficient exhaust draught shall be provided and maintained to control dust from the following processes and machines-

(a) manufacture and conveying machinery namely —

(i) preparing, grinding or dry mixing machines;

(ii) carding, card waste and ring spinning machines and looms;

(iii) machines or other plant fed with asbestos; and

(iv) machines used for the sawing, grinding, turning, drilling, abrading or polishing, in the dry state of articles composed wholly or partly of asbestos.

(b) cleaning and grinding of the cylinders or other parts of a carding machine;

(c) chambers, hoppers or other structures into which loose asbestos is delivered or passes;

(d) work-benches for asbestos waste sorting or for other manipulation of asbestos by hand;

(e) workplaces at which the filling or emptying of sacks, skips or other portable containers, weighing or other process incidental thereto which is effected by hand, is carried on;

(f) sack cleaning machines;

(g) mixing and blending of asbestos by hand; and

(h) any other process in which dust is given off in-to the work environment.

(2) Exhaust ventilation equipment provided in accordance with sub-paragraph (1) shall, while any work of maintenance or repair to the machinery, apparatus or other plant or equipment in connection with which it is provided is being carried on, be kept in use so as to produce an exhaust draught which prevents the entry of asbestos dust into the air of any work place.

(3) Arrangements shall be made to prevent asbestos dust discharged from exhaust apparatus being drawn into the air of any workroom.

(4) The asbestos bearing dust removed from any workroom by the exhaust system shall be collected in suitable receptacles or filter bags which shall be isolated from all work areas.

(5) Testing and examination of ventilating systems— (1) All ventilating systems used for the purpose of extracting or suppressing dust as required by this Schedule shall be examined and inspected once in every week by a responsible person. It shall be thoroughly examined and tested by a competent person once in every period of 12 months. Any defects found by such examinations or test shall be rectified forthwith.

(2) A register containing particulars of such examination and testes, and the state of the plant and the repairs or alteration (if any) found to be necessary shall be kept and shall be available for inspection by an Inspector.

6. Segregation in case of certain process-mixing or blending by the hand of asbestos, or making or repairing of insulating mattresses composed wholly or partly of asbestos shall not be carried on in any room in which any other work is done.

7. Storage and distribution of loose asbestos— (1) All loose asbestos shall while not in use, be kept in suitable closed receptacles which prevent the escape of asbestos dust therefrom; such asbestos shall not be distributed within a factory except in such receptacles or in a totally enclosed system of conveyance.

8. All Asbestos sacks — (1) sacks used as receptacles for the purpose of transport of asbestos within the factory shall be constructed of impermeable materials and shall be kept in good repair.

(2) A sack which has contained asbestos shall not be cleaned by hand beating but by a machine, complying with paragraph 3.

9. Maintenance of floors and workplaces — (1) In every room in which any of the requirements of this Schedule apply — (a) the floors, work-benches, machinery and plant shall be kept in a clean state and free from asbestos debris and suitable arrangements shall be made for the storage of asbestos not immediately required for use; and

(b) the floors shall be kept free from any materials, plant or other articles not immediately required for the work carried on in the room which would obstruct the proper cleaning of the floor.

(2) The cleaning as mentioned in sub-para (1) shall so far as is practicable, as carried out by means of vacuum cleaning equipment so designed and constructed and so used that asbestos dust neither escapes nor is discharged into the air of any work place.

(3) When the cleaning is done by any method other than that mentioned in sub-paragraph (2), the persons doing cleaning work and any other person employed that room shall be provided with respiratory protective equipment and protective clothing.

(4) The vacuum cleaning equipment used in accordance with provisions of sub-paragraph (2), shall be properly maintained and after each cleaning operation, its surfaces kept in a clean state and free from asbestos waste and dust,

(5) Asbestos waste shall not be permitted to remain on the floors or other surfaces at the work place at the end of the working shift and shall be transferred without delay to suitable receptacles. Any spillage of asbestos waste occurring during the course of the work at any time shall be removed and transferred to the receptacles maintained for the purpose without delay.

10. Breathing Apparatus and protective clothing— (1) An approved breathing apparatus and protective clothing shall be provided and maintained in good conditions for use of every person employed —

(a) in chambers containing loose asbestos;

(b) in cleaning, dust settling or filtering chambers of apparatus;

(c) in cleaning the cylinders, including the doffer cylinders, or other parts of a carding machine by means of hand strikes,

(d) in filling, beating, or levelling in the manufacture or repair of insulating mattresses; and

(e) in any other operation or circumstances in which it is impracticable to adopt technical means to control asbestos dust in the work environment within the permissible limit.

(2) Suitable accommodation in conveniently accessible position shall be provided for the use of persons when putting on or taking off breathing apparatus and protective clothing provided in accordance with this rule and for the storage of such apparatus and clothing when not in use.

(3) All breathing apparatus and protective clothing when not in use shall be stored in the accommodation provided in accordance with sub-paragraph above.

(4) All protective clothing in use shall be de-dusted under an efficient exhaust draught or by vacuum cleaning and shall be washed at suitable intervals. The cleaning Schedule and procedure should be such as to ensure the efficiency in protecting the wearer.

(5) All breathing apparatus shall be cleaned and disinfected at suitable intervals and thoroughly inspected once in every month by a responsible person.

(6) A record of the cleaning and maintenance and of the condition of the breathing apparatus shall be maintained in a register provided for that purpose which shall be readily available for inspection by an Inspector.

(7) No person shall be employed to perform any work specified in subparagraph (1) for which breathing apparatus is necessary to be provided under that sub-paragraph unless he has been fully instructed in the proper use of that equipment.

(8) No breathing apparatus provided in pursuance of sub-paragraph (1) which has been worn by a person shall be worn by another person unless it has been thoroughly cleaned and disinfected since last being worn and the person has been fully instructed in the proper use of that equipment.

11. Separate accommodation for personal clothing — A separate accommodation shall be provided in a conveniently accessible position for all person employed in operations to which this Schedule applied for storing of personal clothing. This should be separated from the accommodation provided under sub-paragraph (2) of paragraph (10) to prevent contamination of personal clothing.

12. Washing and bathing facilities— (1) There shall be provided and maintained in a clean state and in good repair for the use of all workers employed in the processes covered by the Schedule, adequate washing and bathing places having a constant supply of water under cover at the rate of one such place for every 15 persons employed.

(2) The washing places shall have standpipes placed at intervals of not less than one meter.

(3) Not less than one half of the total number of washing places shall be provided with bathrooms.

(4) Sufficient supply of clean towels made of suitable material shall be provided:

Provided that such towels shall be supplied individually for each worker if so ordered by the Inspector.

(5) Sufficient supply of soap and nail brushes shall be provided.

13. Messroom— (1) There shall be provided and maintained for use of all workers employed in the factory covered by this Schedule, remaining on the premises during the rest intervals, a suitable messroom which shall be furnished with—

(a) sufficient tables and benches with back rest, and

(b) adequate means for warming food.

(2) The messroom shall be placed under the charge of a responsible person and shall be kept clean.

14. Prohibition of employment of young persons— No young person shall be employed in any of the process covered by this Schedule.

15. Prohibition relating to smoking — No person shall smoke in any area where processes covered by this Schedule are carried on. A notice in the language understood by majority of the workers shall be pasted in the plant prohibiting smoking at such areas.

16. Cautionary Notices— (1) Cautionary notices shall be displayed at the approaches and along the perimeter of every asbestos processing area to warn all persons regarding —(a) hazards to health from asbestos dust;

(b) need to use appropriate protective equipment;

(c) prohibition of entry to unauthorized persons, or authorized persons but without protective equipment. (2) Such notices shall be in the language under-stood by the majority of the workers.

17. Air Monitoring — To ensure the effectiveness of the Control measures, monitoring of asbestos fibre in air shall be carried out once at least in every shift and the record of the results so obtained shall be entered in a register specially maintained for the purpose.

18. Medical facilities and records of medical examinations and tests— (1) The occupier of every factory or part of the factory to which the Schedule applies, shall —

(a) employ qualified medical practitioner for medical surveillance of the workers covered by this Schedule whose employment shall be subject to the approval of the Chief Inspector-cum-facilitator;

(b) provide to the said medical practitioner all the necessary facilities for the purpose referred to in clause (a).

(2) The record of medical examinations and appropriate tests carried out by the said medical practitioner shall be maintained in a separate register approved by the Chief Inspector-cum-facilitators, which shall be kept readily available for inspection by the Inspector-cum-facilitators.

19. Medical examination by **Medical officers** — (1) every worker employed in the processes specified in paragraph 1 shall be examined by a **Medical officer** within 15 days of his first employment. Such examination shall include pulmonary function tests, tests for detecting asbestos fibres in sputum and chest X-ray. No worker shall be allowed to work after 15 days of his first employment in the factory unless certified fit for such employment by the **Medical officer**. (2) Every worker employed in the process referred to sub-paragraph (1) shall be re-examined by a **Medical officer** at least once in every twelve calendar months. Such examinations shall wherever the **Medical officer** considers appropriate include all the tests specified in sub-paragraph (1) except chest Xray which will be carried out once in 3 years.

(3) The **Medical officer** after examining a worker shall issue a certificate of Fitness in **the prescribed format(I) hereinbelow**. The record of examination and re-examination carried out shall be entered in the certificate and the certificate shall be kept in the custody of the manager of the factory. The record of each examination carried out under sub-paragraphs (1) and (2) including the nature and the results of the tests, shall also be entered by the Medical Officer in a health register in **the prescribed format(II) hereinbelow**.

FORMAT(I)
Certificate of Fitness

Serial Number:

I certify that I have personally examined (name) son
of (father's name) residing at (address)
who is desirous of being employed as (designation) in
(process, department and factory)
and that his age, as nearly as can be ascertained from any examination, is years, and that he is, in
my opinion, fit/unfit for employment in the above mentioned factory as mentioned above.
2. He may be produced for further examination after a period of
3. The serial number of the previous certificate is

Signature or left hand thumb impression
of person examined

Signature of Medical Officer

Date:

1	2	3	4
I certify that I have examined the persons mentioned above on	I extend this Certificate until (If Certificate is not extended, the period for which the worker is considered unfit for work is to be mentioned)	Signs and symptoms observed during examination	Signature of the Medical Officer.

FORMAT(II)
Health Register

(In respect of persons employed in occupations declared to be dangerous operations under Section 87) Name of Certifying Surgeon :

(a) Mr.....

From.....

To

(b) Mr.....

From.....

To

(c) Mr.....

From.....

To

Serial No.	Works No.	Name of worker	Sex	Age (birth day)	Date of employment on present work	Date of leaving or transfer to other works	Reason for leaving, transfer or discharge	Nature of job or occupation	Raw material or by-product handled	Dates of Medical Examination by Certifying Surgeon	If suspended from work, state period of suspension with detailed reason	Recertified fit to resume duty on (with signature of Certifying Surgeon)	If certificate of unfitness or suspension issued to worker	Signature with date of Certifying Surgeon
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Note — (i) Column 8. Detailed summary of reasons for transfer or discharge should be stated
(i) Column 11. should be expressed as fit/unfit/suspended.

(4) The Certificate of Fitness and the health register shall be kept readily available for inspection by the Inspector-cum-facilitator.

(5) If at any time the **Medical officer** is of the opinion that a worker is no longer fit for employment in the said processes on the ground that continuance therein would involve special danger to the health of the worker, He/She shall make a record of his finding in the said certificate and the health register. The entry of his findings in those documents should also include the period for which he considers that the said person is unfit to work in the said processes.

(6) No person who has been found unfit to work as said in sub-paragraph (5) shall be re-employed or permitted to work in the said processes unless the Medical Officer, after examination, again certifies him fit for employment in those processes.

20. Exemptions — If in respect of any factory, the Chief Inspector-cum-facilitator is satisfied that owing to the exceptional circumstances or infrequency of the processes or for any other reason, all or any of the provisions of this Schedule, is not necessary for protection of the workers in the factory, the Chief Inspector-cum-facilitator may by a certificate in writing, which he/she may at his discretion revoke at any time, exempt such factory from all or any of such provisions subject to such conditions, if any, as he/she may specify there in.

SCHEDULE VI(R)

[See rule 55]

HANDLING OR MANIPULATION OF CORROSIVE SUBSTANCES

1. Definitions — For the purposes of this Schedule — (a) “corrosive operation” means an operation of manufacturing, storing, handling, processing, packing or using any corrosive substance in a factory; and (b) “corrosive substance” includes sulphuric acid, nitric acid, hydrochloric acid, carbolic acid, phosphoric acid, liquid chlorine, liquid bromine, ammonia, sodium hydroxide and potassium hydroxide and a mixture thereof, and any other substance which the State Government by notification in the Official Gazette specify to be a corrosive substance.

2. Flooring — The floor of every workroom of a factory in which corrosive operation is carried on shall be made of impervious, corrosion and fire resistant material and shall be so constructed as to prevent collection of any corrosive substance. The surface of such flooring shall be smooth and cleaned as often as necessary and maintained on a sound condition.

3. Protective equipment— (1) The occupier shall provide for the use of all persons employed in any corrosive operation suitable protective wear for hands and feet, suitable aprons, face shields, chemical safety goggles, and respirators. The equipments shall be maintained in good order and shall be kept in clean and hygienic condition by suitably treating to get rid of the ill effects of any absorbed chemicals and by disinfecting. The occupier shall also provide suitable protective creams and other preparations wherever necessary.

(2) The protective equipment and preparations provide shall be used by the persons employed in any corrosive operation.

4. Water facilities — Where any corrosive operation is carried on, there shall be provided as close to the place of such operations as possible a source of clean water at a height of 210 centimeters from a pipe of 1.25 centimeters diameter and fitted with a quick acting valve so that in case of injury to the worker by any corrosive substance, the injured part can be thoroughly flooded with water. Whenever necessary in order to ensure continuous water supply, a storage tank having a minimum length, breadth and height of 210 centimeters, 120 centimeters and 60 centimeters respectively or such dimensions as are approved by the Chief Inspector-cum-facilitator shall be provided as the source of clean water.

5. Cautionary notice — A cautionary notice in the following form and printed in the language which majority of the workers employed understand, shall be displayed prominently close to the place where a corrosive operations is carried out and where it can be easily and conveniently read by the workers. If any worker is illiterate effective steps shall be taken to explain carefully to him the contents of the notice so displayed.

**CAUTIONARY
NOTICEDANGER**

Corrosive substances cause severe burns and vapours there of may be extremely hazardous. In case of contact, immediately flood the part affected with plenty of water for at least 15 minutes.

GETMEDICAL ATTENTION QUICKLY

1. Transport— (1) Corrosive substances shall not be filled, moved or carried except in containers and when they are to be transported they shall be placed in crates of sound construction and of sufficient strength. (2) A container with a capacity of 11.5 litres or more of a corrosive substance shall be placed in a receptacle or crate and then carried by more than one person at a heigth below the waist line unless a suitable rubber wheeled truck is used for the purpose.

(2) Containers for corrosive substances shall be plainly labelled.

2. Devices for handling corrosives— (1) Suitable tilting or lifting device shall be used for emptying Jars, carboys and other containers of corrosives.

(2)Corrosive substance shall not be handled by bareh and sbut by means of a suitable scoop or other device.

3. Opening of Valves — Valves fitted to containers holding a corrosive substance shall be opened with great care. If they do not work freely, they shall not be forced open. They shall be opened by a worker suitably trained for the purpose.

4. Cleaning tanks, stills etc.— (1) In cleaning out or removing residues from stills or other large chambers used for holding any corrosive substance, suitable implements made of wood or other material shall be used to prevent production of arseniureted hydrogen (arsine).

(2) Whenever it is necessary for the purpose of cleaning or other maintenance work for any worker to enter chamber, tank, vat, pit or other confined space where a

corrosive substance had been stored all possible precautions as outlined below are required to be undertaken to ensure the worker's safety-

(a) No person shall be required or allowed to enter any chamber, tank, vat, pit, pipe, flue or other confined space in any factory in which any gas, fume vapour or dust is likely to be present to such an extent as to involve risk to persons being overcome thereby, unless it is provided with a manhole of adequate size or other effective means of egress.

(b) No person shall be required or allowed to enter any confined space as is referred to in sub-paragraph 2 (a), until all practicable measures have been taken to remove any gas, fume, vapour or dust, which may be present so as to bring its level within the permissible limits and to prevent any ingress of such gas, fume, vapour or dust and unless—

(i) a certificate in writing has been given by a competent person, based on a test carried out by himself that the space is reasonably free from dangerous gas, fume, vapour or dust; or

(ii) such person is wearing suitable breathing apparatus and a belt securely attached to a rope the free end of which is held by a person outside the confined space.

(3) Wherever possible, before repairs are undertaken to any part of equipment in which a corrosive substance was handled, such equipment or part thereof shall be freed of any adhering corrosive substance by adopting suitable methods.

5. Storage— (1) Corrosive substance shall not be stored in the same room with other chemicals, such as turpentine, carbides, metallic powders and combustible materials, the accidental mixing with which may cause a reaction which is either violent or gives rise to toxic fumes and gases.

(2) Pumping or filling overhead tanks, receptacles, vats or other containers for storing corrosive substance shall be so arranged that there is no possibility of any corrosive substance over flowing and causing injury to any person.

(3) Every container having a capacity of twenty liters or more and every pipeline, valve, and fitting used for storing or carrying corrosive substance shall be thoroughly examined every year for finding out any defect and defects so found out shall be removed forth with. A register shall be maintained of every such examination made and shall be produced before the Inspector-cum-facilitator whenever required.

6. Fire extinguishers and firefighting equipment— An adequate number of suitable type of fire extinguishers or other firefighting equipment, depending on the nature of chemicals stored, shall be provided, such extinguishers or other equipment shall be regularly tested and refilled. Clear instructions as to how the extinguishers or other equipment should be used, printed in the language which majority of the workers employed understand, shall be affixed near each extinguishers or other equipment.

7. Exemption—If in respect of any factory on an application made by the manager, the Chief Inspector-cum-facilitator is satisfied that owing to the exceptional circumstances, or the infrequency of the process or for any other reason to be recorded by him in writing, all or any of the provisions of this Schedule are not necessary for the protection of the persons employed therein, he/she may by a certificate in writing, which he/she may at any time revoke, exempt the factory from such of the provisions and subject to such condition as he/she may specify there in.

SCHEDULE VI(S)**[See rule 55]****MANUFACTURE OR MANIPULATION OF MANGANESE AND ITS COMPOUNDS**

1. Application — This Schedule shall apply to every factory in which or in any part of which any manganese process is carried on.

2. Definition — For the purposes of this Schedule — (a) “manganese process” means processing, manufacture or manipulation of manganese or any compound of manganese or any mixture containing manganese;

(b) “first employment” means first employment in any manganese process and includes also re-employment in any manganese process following any cessation of employment for a continuous period exceeding 3 calendar months;

(c) “manipulation” means mixing, blending, filling, emptying, grinding, sieving, drying, packing, sweeping or otherwise handling of manganese, or a compound of manganese, or any ore or any mixture containing manganese; and

(d) “efficient exhaust ventilation” means localized ventilation effected by mechanical means for the removal of dust or fume, mist at its source of origin so as to prevent it from escaping into the atmosphere of any place where any work is carried on. No draught shall be deemed to be efficient which fails to remove the dust or fume or mist at the point where it is generated and fails to prevent it from escaping into and spreading into the atmosphere of a workplace.

3. Isolation of a process — Every manganese process which may give rise to dust vapour or mist containing manganese, shall be carried on in a totally enclosed system or otherwise effectively isolated from other processes so that other plants and processes and other parts of the factory and persons employed on other processes may not be affected by the same.

4. Ventilation of process — No process in which any dust, vapour or mist containing manganese is generated shall be carried out except under an efficient exhaust ventilation which shall be applied as near to the point of generation as practicable.

5. Personal protective equipment — (1) The occupier of the factory shall provide and maintain in good and clean condition suitable overalls and head coverings for all persons employed in any manganese process and such overalls and head coverings shall be worn by the persons while working on a manganese process.

(2) The occupier of the factory shall provide suitable respiratory protective equipment for use by workers in emergency to prevent inhalation of dusts, fumes or mists. Sufficient number of complete sets of such equipment shall always be kept near the work place and the same shall be properly maintained and kept always in a condition to be used readily.

(3) The occupier shall provide and maintain for the use of all persons employed, suitable accommodation for the storage and make adequate arrangements for cleaning and maintenance of personal protective equipment.

6. Prohibition relating to women and young persons — No women or young persons shall be employed or permitted to work in any manganese process.

7. Food, drinks etc. prohibited in the work rooms — No food, drink, pan and supari or tobacco shall be allowed to be brought into or consumed by any worker in any workroom in which any manganese process is carried on.

8. Messroom — There shall be provided and maintained for the use of the persons employed in a manganese process a suitable messroom which shall be furnished with sufficient tables and benches and adequate means for warming of food. The messroom shall be placed under the charge of a responsible person and shall be kept clean.

9. Washing facilities— There shall be provided and maintained in a clean state and in good condition, for the use of persons employed on manganese process —

(a) a wash place under cover, with either — (i) a trough with a smooth impervious surface fitted with a waste pipe without plug, and of sufficient length to allow at least 60 centimeters for every ten such persons employed at any one time, and having a constant supply of water taps or jets above the trough at intervals of not more than 60 centimeters; or

(ii) at least one wash basin for every such persons employed at any one time, fitted with a waste pipe and plug having a constant supply of water; and

(b) sufficient supply of soap or other suitable cleaning material and nail brushes and clean towels.

10. Cloakroom — If the Chief Inspector so requires there shall be provided and maintained for the use of persons employed in manganese process a cloakroom for clothing put off during working hours with adequate arrangements for drying the clothing.

11. Cautionary placard and instructions— Cautionary notices in the form specified in appendix and printed in the language of the majority the workers employed shall be affixed in prominent places in the factory where they can be easily and conveniently read by the workers and arrangement shall be made by the occupier to instruct periodically all workers employed in a manganese process regarding the health hazards connected with their duties and the best preventive measures and methods to protect themselves. The notices shall always be maintained in a legible condition.

12. Medical examination— (1) Every person employed in a manganese process shall be medically examined by Medical Officer within 14 days of his first employment and thereafter at intervals of not more than three months.

(2) If a person medically examined is found fit for employment on a manganese process the Medical Officer shall grant a certificate of fitness in **the prescribed format** which shall be kept in the custody of the manager of the factory. The certificate shall be readily produced by the manager whenever required by any Inspector, and the person granted such a certificate shall be provided with a token made of metal with the number of the certificate inscribed there on and the said person shall always carry the said token while at work.

(3) If a person is found unfit for work in any manganese process, the Medical Officer shall grant a certificate to that effect and such person shall not be allowed to work in any manganese process.

FORMAT
Certificate of Fitness

Serial Number:

I certify that I have personally examined (name) son
of (father's name) residing at (address)
who is desirous of being employed as (designation) in
(process, department and factory)
and that his age, as nearly as can be ascertained from any examination, is years, and that he is, in
my opinion, fit/unfit for employment in the above mentioned factory as mentioned above.

2. He may be produced for further examination after a period of

3. The serial number of the previous certificate is

Signature or left hand thumb impression
of person examined

Signature of Medical Officer

Date:

1	2	3	4
I certify that I have examined the persons mentioned above on	I extend this Certificate until (If Certificate is not extended, the period for which the worker is considered unfit for work is to be mentioned)	Signs and symptoms observed during examination	Signature of the Medical Officer.

(4) (a) If the Medical Officer finds that any worker who had been granted a certificate of fitness at a previous medical examination was no longer fit to be employed on any manganese process, he/she may revoke the previous certificate and no person whose certificate of fitness has been revoked shall be allowed to work on any manganese process;
(b) The Medical Officer may require such person to be produced before him for fresh medical examination after such period as he/she may specify in writing on the revoked certificate and in the health register.

(5) If the Medical Officer is of the opinion that a person had become permanently unfit for employment on any manganese process, He/She/she/she shall make an entry to that effect in the certificate and in the health register and no such person shall be allowed to work in any manganese process.

(6) If the Medical Officer is of the opinion that any special expert examination or test is necessary for a proper diagnosis in a doubtful case he/she may direct the manager and or the occupier to get the worker examined by such expert or to get such tests carried out as may be specified by him and the manager or the occupier as the case may be shall comply with the direction given within a specified time and the report of examination or test as the case may be brought before the Medical Officer

(7) If the Medical Officer is of the opinion that any person is not fit for employment in any manganese process but is fit to be employed on any other work he/she may advise the manager or the occupier to employ the said person on such other job as may be safe for him. The Medical Officer may also advise the worker to undergo such treatment as he/she may consider necessary.

(8) If any person has any doubt regarding the diagnosis or decision of the **Medical officer** he/she may make an appeal to the Chief Inspector-cum-facilitator and the Chief Inspector-cum-facilitator may refer the case to the Medical Inspector-cum-facilitator of Factories or to a Medical committee constituted by him for this purpose of which Medical Inspector-cum-facilitator of Factories shall be a member. The decision of the Medical Inspector-cum-facilitator or the committee as the case may be shall be final in the matter.

13. Exemption— If in respect of any factory, the Chief Inspector-cum-facilitator is satisfied that owing to any exceptional circumstances, or infrequency of the process, or for any other reason, application of all or any of the provisions of this Schedule is not necessary for the protection of the persons employed in such factory he/she may by an order in writing which he/she may at his discretion revoke, exempt such factory from all or any of the provisions on such conditions and for such period as he/she may specify in the said order.

APPENDIX
CAUTIONARY NOTICE
MANGANESE AND MANGANESE COMPOUNDS

1. Dust, fumes and mists of manganese and its compounds are toxic when inhaled or when ingested.
2. Do not consume food or drink near the work place.
3. Take a good wash before taking meals.
4. Keep the working area clean.
5. Use the protective clothing and equipment provided.
6. When required to work in situations where dusts, fumes or mists are likely to be inhaled, use respiratory protective equipment provided for the purpose.
7. If you get severe headaches, prolonged sleeplessness or abnormal sensations on the body, report to the manager who would make arrangements for your examination and treatment.

SCHEDULE VI(T)**[See rule 55]****MANUFACTURE OR MANIPULATION OF DANGEROUS PESTICIDES**

1. Application — This Schedule shall apply in respect of all factories or any part thereof in which the process of manufacture or manipulation of dangerous pesticide hereinafter referred to as the said manufacturing process is carried on

2. Definition— For the purpose of this Schedule — (a) “dangerous pesticides” means any product proposed or used for controlling, destroying or repelling any pest or for preventing growth or mitigating effects of such growth including any of its formulations which is considered toxic under and is covered by the Insecticides Act, 1968 and the rules made thereunder and any other product, as may be notified from time to time by the State Government;

b) “manipulation” includes mixing, blending, formulating, filling, emptying, packing or otherwise handling;

(c) “efficient exhaust draught” means localised mechanical ventilation for removal of smoke, gas, vapour, dust, fume or mist so as to prevent them from escaping into the air of any work room in which work is carried on. No exhaust draught shall be considered efficient if it fails to remove smoke generated at the point where such gas, fume, dust, vapour or mist originates from the process;

(d) “first employment” shall mean first employment in any manufacturing process to which this Schedule applies and shall also include re-employment in the said manufacturing process following any cessation of employment for a continuous period exceeding three calendar months; and

(e) “suspension” means suspension from employment in any process wherein a dangerous pesticide is manipulated, by written certificate in the health register in **the prescribed format** signed by the Medical Officer who shall be competent to suspend all persons employed in such process.

FORMAT
Health Register

(In respect of persons employed in occupations declared to be dangerous operations under Section 87) Name of Certifying Surgeon :

(a) Mr..... From..... To

(b) Mr..... From..... To

(c) Mr..... From..... To

Serial No.	Works No.	Name of worker	Sex	Age (birth day)	Date of employment on present work	Date of leaving or transfer to other works	Reason for leaving, transfer or discharge	Nature of job or occupation	Raw material or by-product handled	Dates of Medical Examination by Certifying Surgeon	If suspended from work, state period of suspension with detailed reason	Recertified fit to resume duty on (with signature of Certifying Surgeon)	If certificate of unfitness or suspension issued to worker	Signature with date of Certifying Surgeon
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Note — (i) Column 8. Detailed summary of reasons for transfer or discharge should be stated
(i) Column 11. should be expressed as fit/unfit/suspended.

3. **Instruction to workers :** Every worker on his first employment shall be fully instructed on the properties including dangerous properties of the chemical handled in the said manufacturing process and the hazards involved. The employees shall also be instructed in the measures to be taken to deal with emergency. Such instructions shall be repeated periodically.

4. **Cautionary notice and placards:** Cautionary notices and placards in the form specified in appendix to this Schedule and printed in the language of the majority of the workers shall be displayed in all work places in which said manufacturing process is carried on so that they can be easily and conveniently read by the workers. Arrangements shall be made by the occupier and the manager of the factory to periodically instruct the workers regarding the health hazards arising in the said manufacturing process and methods of protection. Such notices shall include brief instructions regarding the periodical clinical tests required to be undertaken for protecting health of the workers.

5. **Prohibition relating to employment of women or young persons:** No woman or young person shall be employed or permitted to work in any room in which the said manufacturing process is carried on or, in any room in which dangerous pesticide is stored.

6. Food, drinks and smoking prohibited— (1) No food, drink, tobacco, pan and supari shall be brought into or consumed by any worker in any workroom in which the said manufacturing process is carried out. (2) Smoking shall be prohibited in any workroom in which the said manufacturing process is carried out.

7. Protective clothing and protective equipment — (1) Protective clothing consisting of long pants and shirts or overalls with long sleeves and head coverings shall be provided for all workers employed in the said manufacturing process.

(2)(a) Protective equipment consisting of rubber gloves, gum boots, rubber aprons, chemical safety goggles and respirators shall be provided for all workers employed in the said manufacturing process;

(b) Gloves, boots, aprons shall be made from synthetic rubber where a pesticide contains oil.

(3) Protective clothing and equipment shall be worn by the workers supplied with such clothing and equipment.

(4) Protective clothing and equipment shall be washed daily from inside and outside if the workers handle pesticides containing nicotine or phosphorous and shall be washed frequently if handling other pesticides. (5) Protective clothing and equipment shall be maintained in good repair.

8. Floors and work benches— (1) Floors in every workroom where dangerous pesticides are manipulated shall be of cement or other impervious material giving a smooth surface.

(2) Floors shall be maintained in good repair, provided with adequate slope leading to a drain and thoroughly washed once a day with hose pipe.

(3) Work-benches where dangerous pesticides are manipulated shall be made of smooth, non-absorbing material preferably stainless steel and shall be cleaned at least once daily.

9. Spillage and waste — (1) If a dangerous pesticide during its manipulation splashes or spills on the workbench, floor or on the protective clothing worn by a worker, immediate action shall be taken for thorough decontamination of such areas or articles.

(2) Cloth, rags, paper or other material soaked or soiled with a dangerous pesticide shall be deposited in a suitable receptacle with tight fitting cover. Contaminated waste shall be destroyed by burning at least once a week.

(3) Suitable deactivating agents, where available, shall be kept in a readily accessible place for use while attending to a spillage.

(4) Easy means of access shall be provided to all parts of the plant for cleaning, maintenance and repairs.

10. Empty containers used for dangerous pesticides— Containers used for dangerous pesticides shall be thoroughly cleaned of their contents and treated with an inactivating agent before being discarded or destroyed.

11. Manual handling— (1) A dangerous pesticide shall not be required or allowed to be manipulated by hand except by means of a long handled scoop.

(2) Direct contact of any part of the body with a dangerous pesticide during its manipulation shall be avoided.

12. Ventilation— (1) In every workroom or area where a dangerous pesticide is manipulated, adequate ventilation shall be provided at all times by the circulation of fresh air.

(2) Unless the process is completely enclosed, the following operations during manipulation of a dangerous pesticide shall not be undertaken without an efficient exhaust draught — (a) emptying a container holding a dangerous pesticide; (b) blending a dangerous pesticide; (c) preparing a liquid or powder formulation containing a dangerous pesticide; and (d) changing or filling a dangerous pesticide into a container, tank hopper or machine or small sized containers.

(3) In the event of a failure of the exhaust draught provided on the above operation, the said operations shall be stopped forthwith.

13. Time allowed for washing— (1) Before each meal and before the end of the day's work at least ten minutes in addition to the regular rest interval shall be allowed for washing to each worker engaged in the manipulation of dangerous pesticide.

(2) Every worker engaged in the manipulation of dangerous pesticides shall have a thorough wash before consuming any food and also at the end of the day's work.

14. Washing and bathing facilities— (1) There shall be provided and maintained in a clean state and in good repair for the use of all workers employed in the factory where the said manufacturing process is carried on, adequate washing and bathing places having a constant supply of water under cover at the rate of one such place for every 5 persons employed.

(2) The washing places shall have standpipes placed at intervals not less than one metre.

(3) Not less than one half of the total number of washing places shall be provided with bathrooms.

(4) Sufficient supply of clean towels made of suitable material shall be provided, provided that such towels shall be supplied individually for each worker if so ordered by the Inspector-cum-facilitator.

(5) Sufficient supply of soap and nail brushes shall be provided.

15. Cloakroom — There shall be provided and maintained for the use of all workers employed in the factory where the said manufacturing process is carried on —

(a) a cloakroom for clothing put off during working hours with adequate arrangements for drying clothing, if wet; and

(b) separate and suitable arrangements for the storage of protective clothing provided under paragraph 7.

16. Messroom— (1) There shall be provided and maintained for the use of all workers employed in the factory in which the said manufacturing process is carried on and remaining on the premises during the rest intervals, a suitable messroom which shall be furnished with —

(a) sufficient tables and benches with back rest; and

(b) adequate means for warming food.

(2) The messroom shall be placed under the charge of a responsible person and shall be kept clean.

17. Manipulation not to be undertaken — Manufacture or manipulation of pesticides shall not be undertaken in any factory unless a certificate regarding its dangerous nature or otherwise is obtained from the Chief Inspector.

18. Medical examination — (1) Every worker employed in the said manufacturing process shall be examined by the **Medical officer** within seven days of the first employment and no worker shall be allowed to work unless certified fit for such employment by the **Medical officer**.

(2) Every worker employed in the said manufacturing process shall be reexamined by a **Medical officer** at least once in 6 calendar months.

(3) Due notice shall be given to the Medical Officer and the concerned workers regarding the arrangements for examination of workers employed in the said manufacturing process after obtaining the consent regarding the arrangement from the **Medical officer**.

(4) Health register in **the prescribed format** containing name of all workers employed in the said manufacturing process shall be maintained.

FORMAT

Health Register

(In respect of persons employed in occupations declared to be dangerous operations under Section 87) Name of Certifying Surgeon :

(a) Mr..... From..... To

(b) Mr..... From..... To

(c) Mr..... From..... To

Serial No.	Works No.	Name of worker	Sex	Age (birth day)	Date of employment on present work	Date of leaving or transfer to other works	Reason for leaving, transfer or discharge	Nature of job or occupation	Raw material or by-product handled	Dates of Medical Examination by Certifying Surgeon	If suspended from work, state period of suspension with detailed reason	Recertified fit to resume duty on (with signature of Certifying Surgeon)	If certificate of unfitness or suspension issued to worker	Signature with date of Certifying Surgeon
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Note — (i) Column 8. Detailed summary of reasons for transfer or discharge should be stated
(i) Column 11. should be expressed as fit/unfit/suspended.

(5) No worker after suspension shall be employed without written sanction from the **Medical officer** entered in-or attached to the health register

19. Medical facilities— (1) The occupier shall engage a qualified medical practitioner approved by the Chief Inspector-cum-facilitator who shall examine and when necessary treat on the premises of the factory, all workers who are employed in the said manufacturing process, for effects of excessive absorption of the dangerous pesticides at least once a week.

(2) The occupier shall make necessary arrangements to ensure quick availability of qualified medical practitioner in emergency.

(3) The occupier shall provide medicines and antidotes and other equipment required for treatment of excessive absorption of dangerous pesticides.

(4) Records of such examinations and treatment and tests shall be maintained in a form approved by the Chief Inspector and shall be made available to Inspector.

(5) The Chief Inspector may order suitable clinical test or tests to be carried out at specified intervals in respect of workers in any factory where such manufacturing process is carried on. Charges of such test or tests shall be borne by the employer.

(6) Every worker in any factory where the said manufacturing process is carried on shall undergo the prescribed examinations, tests and treatments.

20. Exemption — If in respect of any factory the Chief Inspector is satisfied that owing to the exceptional circumstances or the infrequency of the said manufacturing process or any other reason which He/She shall record in writing all or any of the provisions of this Schedule are not necessary for the protection of the workers employed in the factory, he/she may by a certificate in writing exempt such factory, from all or any of the provisions on such condition as he/she may specify therein, such certificate may at any time be revoked by the Chief Inspector recording his reasons there for.

APPENDIX CAUTIONARY NOTICE INSECTICIDES AND PESTICIDES

1. Chemicals handled in this plant are poisonous substances.
2. Smoking, taking food or drinking, chewing tobacco in this area is prohibited. No food stuff or drink shall be brought in this area.
3. Some of these chemicals may be absorbed through skin and may cause poisoning.
4. A good bath shall be taken at the end of the shift
5. A good wash shall be taken before meals.
6. Protective clothing and equipment supplied shall be used while working in this area.
7. Containers of pesticides shall not be used for keeping food stuffs.
8. Spillage of the chemicals on any part of the body or on the floor or work bench shall be immediately washed away with water.
9. Clothing contaminated due to splashing shall be removed immediately.
10. Scrupulous cleanliness shall be maintained in this area.
11. Do not handle pesticides with bare hands, use scoops provided with handle.
12. In case of sickness like nausea, vomiting, giddiness, the manager should be informed who will make necessary arrangement for treatment.
13. All workers shall report for the prescribed medical tests regularly to protect their own health.

SCHEDULE VI(U)**[See rule 55]****MANUFACTURING PROCESS OR OPERATION IN CARBON DISULPHIDE PLANTS**

1. Application — This Schedule shall apply to all electric furnaces in which carbon disulphide is generated and all other plants where Carbon disulphide after generation is condensed, refined and stored. This Schedule is in addition to and not in derogation of any of the provisions of the Act and Rules made there under.

2. Construction, installation and operation — (1) The buildings in which electric furnaces are installed and carbon disulphide after generation is condensed and refined shall be segregated from other parts of the factory and shall be of open type to ensure optimum ventilation and the plant layout shall be such that only a minimum number of workers are exposed to the risk of any fire or explosion at any one time.

(2) Every electrical furnace and every plant in which carbon disulphide is condensed, refined and stored with all their fittings and attachments shall be of good construction, sound material and of adequate strength to sustain the internal pressure to which the furnace or the plant may be subjected to and shall be so designed that carbon disulphide liquid and gas are in closed system during their normal working.

(3) The electric furnace supports shall be finely grouted about 60 centimeters in concrete or by other effective means.

(4) Every electric furnace shall be installed and operated according to manufacturer's instructions and these instructions shall be clearly imparted to the personnel in charge of construction and operation.

(5) The instructions regarding observance of correct furnace temperature, Sulphur dose, admissible current or power consumption and periodical checking of charcoal level be strictly complied with.

3. Electrodes— (1) Where upper ring electrodes made of steel are used in the electric furnace, they shall be of seamless tube construction and shall have arrangement for being connected to cooling water system through a siphon built in the electrodes or through a positive pressure water-pump.

(2) The arrangement for cooling water referred to in sub-paragraph (1) shall be connected with automatic alarm system which will actuate in the event of interruption of cooling water in the electrodes and give visible and audible alarm signals in the control room and simultaneously stop power supply for the furnace operation and to stop the further supply of water. The alarm system and the actuating device shall be checked every day.

4. Maintenance of charcoal level — When any electric furnace is in operation, it shall be ensured that the electrodes are kept covered with charcoal bed.

5. Charcoal separator— A cyclone type of charcoal separator shall be fitted on the off take pipe between the electric furnace and Sulphur separator to prevent entry of pieces of charcoal into the condensers and piping.

6. Rupture discs and safety seal — (1) At least two rupture discs of adequate size which shall blow off at a pressure twice the maximum operating pressure shall be provided on each furnace and shall either be mounted directly on the top of the furnace or each through an independent pipe as close as possible to the furnace.

(2) A safety water seal shall be provided and tapped from a point between the charcoal separator and the Sulphur separator.

7. Pyrometer and manometers— (1) Each electric furnace shall be fitted with adequate number of pyrometers to give an indication of the temperature as correctly as reasonably practicable at various points in the furnace. The dials for reading the temperatures shall be located in the control room.

(2) Manometers or any other suitable devices shall be provided for indicating pressure.

(a) in the offtake pipe before and after the sulphur separator; and

(b) in primary and secondary condensers.

8. Check valves — All piping carrying carbon disulphide shall be fitted with check valves at suitable positions so as to prevent gas from flowing back into any electric furnace in the event of its shut down.

9. Inspection and maintenance of electric furnaces— (1) Every electric furnace shall be inspected internally by a competent person —

(a) before being placed in service after installation;

(b) before being placed in service after reconstruction; or repairs; and

(c) periodically every time the furnace is opened for cleaning or deashing or for replacing electrodes.

(2) When an electric furnace is shut down for cleaning or deashing.

(a) the brick lining shall be checked for continuity and any part found defective removed;

(b) after removal of any part of the lining referred to in (7) the condition of the shell be closely inspected; and

(c) any plates forming shell found corroded to the extent that safety of the furnace is endangered shall be replaced.

10. Maintenance of records — The following hourly records shall be maintained in a log book —

(a) manometer readings at the points specified in sub-paragraph 7 (2);

(b) gas temperature indicated by pyrometers at all other vital points near the Sulphur separator and primary and secondary condensers;

(c) water temperature and flow of water through the siphon in the electrodes; and

(d) primary and secondary voltages and current and energy consumed.

11. Electrical apparatus, wiring and fittings — All buildings in which carbon disulphide is refined or stored shall be provided with electrical apparatus, wiring and fitting which shall afford adequate protection from fire and explosion.

12. Prohibition relating to smoking— No person shall smoke or carry matches, fire or naked light or other means of producing a naked light or spark in buildings in which carbon disulphide is refined or stored and a notice in the language understood by a majority of the workers shall be posted in the plant prohibiting smoking and carrying of matches, fire or naked light or other means of producing naked light of spark into such rooms.

13. Means of escape — Adequate means of escape shall be provided and maintained to enable persons to move to a safe place as quickly as possible in case of an emergency. At least two independent staircases of adequate width shall be provided in every building housing the furnaces at reasonable intervals at opposite ends. These shall always be kept clear of all obstructions and so designed as to afford easy passage.

14. Warning in case of fire — There shall be adequate arrangements for giving warnings in case of fire or explosion which shall operate on electricity and in case of failure of electricity, by some mechanical means.

15. Fire-fighting equipment— (1) Adequate number of suitable fire extinguishers or other fire-fighting equipment shall be kept in constant readiness for dealing with risks involved and depending on the amount and nature of materials stored.

(2) Clear instructions as to how the extinguishers or other equipment should be used printed in the language which the majority of the workers employed understand, shall be affixed to each extinguisher or other equipment and the personnel trained in their use.

16. Bulksulphur— (1) Open or semi-enclosed spaces for storage of bulk sulphur shall be sited with due regard to the dangers which may arise from sparks given off by nearby locomotives, etc., and precautions shall be taken to see that flames, smoking and matches and other sources of ignition do not come in contact with the clouds of dust arising during handling of bulk sulphur.

(2) All enclosures for bulk sulphur shall be of noncombustible construction, adequately ventilated and so designed as to provide a minimum of ledges on which dust may lodge.

(3) The bulk Sulphur in the enclosures shall be handled in such a manner as to minimize the formation of dust clouds and no flame, smoking and matches or other sources of ignition shall be employed during handling and nonsparking tools shall be used whenever Sulphur is shoveled or otherwise removed by hand.

(4) No repairs involving flames, heat or use of hand or power tools shall be made in the enclosure where bulk sulphur is stored.

17. Liquid sulphur — Open flames, electric sparks and other sources of ignition, including smoking and matches, shall be excluded from the vicinity of molten sulphur.

18. Training and supervision— (1) All electric furnaces and all plants in which carbon disulphide is condensed, refined or stored shall be under adequate supervision at all times while the furnaces and plant are in operation.

(2) Workers incharge of operation and maintenance of electric furnaces and the plants shall be properly qualified and adequately trained.

19. Washing facilities— (1) The occupier shall provide and maintain in a clean state and in good repair, for the use of all persons employed, wash place under cover with at least one tap or standpipe, having a constant supply of clean water for every five such persons, the taps or stand pipes being spaced not less than 120 centimeters apart with a sufficient supply of soap and clean towels, provided that towels shall be supplied individually to each worker if so ordered by the Inspector.

(2) All the workers employed in the sulphur storage, handling and melting operation shall be provided with a nail brush.

20. Personal protective equipment — (1) Suitable goggles and protective clothing consisting of overalls without pockets, gloves and foot wear shall be provided for the use of operators —

(a) when operating valves or cocks controlling fluids etc.;

(b) drawing off of molten sulphur from sulphur pots; and

(c) handling charcoal or sulphur.

(2) Suitable respirators protective equipment shall be provided and stored in the appropriate place for use during abnormal conditions or in an emergency.

(3) Arrangements shall be made for proper and efficient cleaning of all such protective equipment.

21. Cloakrooms — There shall be provided and maintained for the use of all persons employed in the processes a suitable cloakroom for clothing put off during work hours and a suitable place separate from the cloakroom for the storage of overalls or working clothes. The accommodation so provided shall be placed in the charge of a responsible person and shall be kept clean.

22. Unauthorised persons— Only maintenance and repair personnel, person directly connected with the plant operation and those accompanied by authorised persons shall be admitted into the plant.

SCHEDULE VI(V)
[See rule 55]

MANUFACTURING OR MANIPULATION OF CARCINOGENIC DYE INTERMEDIATES

1. Application — This Schedule shall apply in respect of all factories or any part thereof where processes in which the substances mentioned in paragraph 3 and 4 are formed, manufactured, handled or used and the processes incidental thereto in the course of which these substances are formed, are carried on. The processes indicated in this paragraph shall be referred to hereinafter as “the said processes” and such a reference shall mean any or all the processes described in this paragraph.
2. Definitions — For the purpose of this Schedule the following definitions shall apply, unless the context otherwise requires —
 - (a) “controlled substances” means chemical substances mentioned in paragraph 4 of this Schedule;
 - (b) “first employment” means first employment in the said processes and also re-employment in such processes following any cessation of employment for a continuous period exceeding three calendar months;
 - (c) “efficient exhaust draught” means localised ventilation effected by mechanical means for the removal of gas, vapour, dust or fume so as to prevent them from escaping into the air of any place in which work is carried on. No draught, shall be deemed to be efficient which fails to remove smoke generated at the point where such gas, vapour, fume or dust originates; and
 - (d) “prohibited substances” means chemical substances mentioned in paragraph (3) of this Schedule.
3. Prohibited substances — For the purpose of this Schedule the following chemical substances shall be classified as “prohibited substances” except when these substances are present or are formed as a by-product of a chemical reaction in a total concentration not exceeding one percent —
 - (a) beta-naphthylamine and its salts;
 - (b) benzidine and its salts;
 - (c) 4-amino biphenyl and its salts;
 - (d) 4-nitro diphenyl and its salts; and
 - (e) any substance containing any of these compounds.
4. Controlled substances — For the purpose of this Schedule, the following chemical substances shall be classified as “controlled substances”—
 - (a) alpha-naphthylamine or alpha-naphthylamine containing not more than one percent of betanaphthylamine either as a by-product of chemical reaction or otherwise, and its salts;
 - (b) ortho-tolidine and its salts;
 - (c) dianisidine and its salts;
 - (d) dichlorobenzidine and its salts;
 - (e) auramine; and
 - (f) magneta.
5. Prohibition of employment — No person shall be employed in the said processes in any factory in which any prohibited substance is formed, manufactured, processed, handled, or used except as exempted by the Chief Inspector-cum-facilitator as stipulated in paragraph 23.

6. Requirements for processing or handling controlled substances — (1) Wherever any of the controlled substances referred to in paragraph 4 are formed, manufactured, processed, handled, or used, all practical steps shall be taken to prevent inhalation, ingestion or absorption of the said controlled substance by the workers while engaged in processing that substance, and its storage or transport within the plant, or in cleaning or maintenance of the concerned equipment, plant, machinery and storage areas.

(2) As far as possible all operations shall be carried out in a totally enclosed system. Wherever such enclosure is not possible, efficient exhaust draught shall be applied at the point where the controlled substances are likely to escape into the atmosphere during the process.

(3) The controlled substances shall be received in the factory in tightly closed containers and shall be kept so except when these substances are in process or in use. The controlled substances shall leave the factory only in tightly closed containers of appropriate type. All the containers shall be plainly labelled to indicate the contents.

7. Personal protective equipment— (1) The following items of personal protective equipment shall be provided and issued to every worker employed in the said processes —
(a) long trousers and shirts or overalls with full sleeves and head coverings. The shirt or overall shall cover the neck completely; and
(b) rubber gum-boots.

(2). The following items of personal protective equipment shall be provided in sufficient numbers for use by workers employed in the said process when there is danger of injury during the performance of normal duties or in the event of emergency —

(a) rubber hand-gloves;

(b) rubber aprons; and

(c) airline respirators or other suitable respiratory protective equipment.

(3) It shall be the responsibility of the manager to maintain all items of personal protective equipment in a clean and hygienic condition and in good repair.

8. Prohibition relating to employment of woman and young persons -No women or young person shall be employed or permitted to work in any room in which the said processes are carried on.

9. Floors of workroom— The floor of every workroom in which the said processes are carried on shall be (a) smooth and impervious to water provided that asphalt or tar shall not be used in the composition of the floor,

(b) maintained in a state of good repair,

(c) with a suitable slope for easy draining and provided with gutters and

(d) thoroughly washed daily with the drain water being led into a sewer through a closed channel.

10. Disposal of empty containers— Empty containers used for holding controlled substances shall be thoroughly cleaned of their contents and treated with an inactivating agent before being discharged.

11. Manual handling— Controlled substances shall not be allowed to be mixed, filled, emptied or handled except by means of a scoop with a handle. Such scoop shall be thoroughly cleaned daily.

12. Instruction regarding risk— Every worker in his first employment in the said processes shall be fully instructed on the properties of the toxic chemicals to which he is likely to be exposed to, of the dangers involved and the precautions to be taken. Workers shall also be instructed on the measures to be deal with an emergency.

13. Cautionary placards— Cautionary placards in the form specified in appendix attached to this Schedule and printed in the language of the majority of the workers employed in the said processes shall be affixed in prominent places frequented by them in the factory, where the placards can be easily and conveniently read. Arrangements shall be made by the manager to instruct periodically all such workers regarding the precautions contained in the cautionary placards.

14. Obligations of the workers — It shall be the duty of the persons employed in the said processes to submit themselves for the medical examination including exfoliative cytology of urine by the Medical Officer or the qualified medical practitioner as provided for under these rules.

15. Washing and bathing facilities— (1) The following washing and bathing facilities shall be provided and maintained in clean state and in good repair for the use of all workers employed in the said processes :— (a) a wash place under cover having constant supply of water and provided with clean towels, soap and nail brushes and with at least one stand pipe for every five such workers;

(b) 50 percent of the stand pipes provided under clause shall be located in bathrooms where both hot and cold water shall be made available during the working hours of the factory and for one hour thereafter; (c) the washing and bathing facilities shall be in close proximity of the area housing the said processes;

(d) clean towels shall be provided individually to each worker; and

(e) in addition to the taps mentioned under clause, one stand pipe and in which warm water is made available shall be provided each floor.

(2) Arrangement shall be made to wash factory uniforms and other work clothes every day.

16. Food, drinks, etc. prohibited in workroom — No worker shall consume food, drink, pan, supari and tobacco or shall smoke in any workroom in which the said processes are carried on and no worker shall remain in any such room during intervals for meals or rest.

17. Cloakroom— There shall be provided and maintained in a clean state and in good repair for the use of the workers employed in the said processes (a) a cloakroom with lockers having two compartments one for street clothes and the other for work clothes, and (b) a place separate from the locker room and the messroom, for the storage of protective equipment provided under paragraph. The accommodation so provided shall be under the care of a responsible person and shall be kept clean.

18. Messroom— There shall be provided and maintained for the use of workers employed in the said processes who remain on the premises during meal intervals, a messroom which shall be furnished with tables and benches and provided with suitable means for warming food.

19. Time allowed for washing— Before the end of each shift 30 minutes shall be allowed for bathing for each worker who is employed in the said processes. Further atleast 10 minutes shall be allowed for washing before each meal in addition to the regular time allowed for meals.

20. Restriction on age of persons employed — No worker under the age of 40 years shall be engaged in the factory in the said processes for the first time after the date on which the Schedule come into force.

21. Medical examination— (1) Every worker employed in the said processes shall be examined by a **Medical officer** within 14 days of his first employment. Such examination shall include tests which the Medical Officer may consider appropriate and shall include exfoliative cytology of the urine. No worker shall be allowed to work after 14 days of his first employment in the factory unless certified fit for such employment by the **Medical officer**.

(2) Every worker employed in the said processes shall be re-examined by a **Medical officer** at least once in every six calendar months. Such examination shall include tests which the **Medical officer** may consider appropriate but shall include exfoliative cytology of the urine

(3) A person medically examined under sub-paragraph (1) shall be granted by the **Medical officer** a certificate of fitness in **the prescribed format**. Record of each re-examination carried out under sub-paragraph (2) shall be entered in the certificate. The certificate shall be kept in the custody of the manager of the factory.

FORMAT Certificate of Fitness

Serial Number:

I certify that I have personally examined (name) son of (father's name) residing at (address) who is desirous of being employed as (designation) in (process, department and factory) and that his age, as nearly as can be ascertained from any examination, is years, and that he is, in my opinion, fit/unfit for employment in the above mentioned factory as mentioned above.
2. He may be produced for further examination after a period of
3. The serial number of the previous certificate is

Signature or left hand thumb impression
of person examined

Signature of Medical Officer

Date:

1	2	3	4
I certify that I have examined the persons mentioned above on	I extend this Certificate until (If Certificate is not extended, the period for which the worker is considered unfit for work is to be mentioned)	Signs and symptoms observed during examination	Signature of the Medical Officer.

22. Medical facilities— (1) The occupier of every factory in which the said processes are carried on shall engage a qualified medical practitioner for medical surveillance of the workers employed in such processes. His appointment shall be subject to approval of the Chief Inspector -cum-facilitator,

(2) The occupier shall provide to him all the necessary facilities for the purpose referred to in sub-paragraph (1)

(3) A record of medical examination and appropriate tests carried out by the qualified medical practitioner shall be maintained in a form approved by the Chief Inspector.

23. Exemptions - Prohibited substances— (1) The Chief Inspector-cum-facilitator may by a certificate in writing (which he/she may at his direction revoke at any time), subject to such conditions, if any, as may be specified therein exempt any process in the course of which any of the prohibited substances is formed, processed, manufactured, handled, or used, from the provisions of paragraph (5) if he is satisfied that the process is carried out in

a totally enclosed and hermetically sealed system in such a manner that the prohibited substance is not removed from the system except in quantities no greater than that required for the purpose of control of the process or such purposes as is necessary to ensure that the product is free from any of the prohibited substances.

(2) The Chief Inspector-cum-facilitator may allow the manufacture, handling or use of benzidine hydrochloride provided that all the processes in connection with it are carried out in a totally enclosed system in such a manner that no prohibited substance other than benzidine hydrochloride is removed there from except in quantities not greater than that required for the purpose of control of the processes or such purposes as is necessary to ensure that the product is free from prohibited substance and that adequate steps are taken to ensure that benzidine hydrochloride is, except while not in a totally enclosed system, kept wet with not less than one part of water to two parts of benzidine hydrochloride at all times.

24. Exemptions-general — If in respect of any factory, the Chief Inspector-cum-facilitator is satisfied that owing to the exceptional circumstances or infrequency of the processes or for any other reason, all or any of the provisions of this schedule is not necessary for the protection of the workers in the factory, the Chief Inspector-cum-facilitator may by a certificate in writing (which he/she may in his discretion revoke at any time), exempt such factory from all or any of such provisions subject to such conditions, if any, as he/she may specify therein.

APPENDIX CAUTIONARY PLACARD / NOTICE

Carcinogenic dye intermediates — (1) Dye intermediates which are nitro amino derivatives or aromatic hydrocarbons are toxic. You have to handle these chemicals frequently in this factory.

(2) Use the various items of protective wear to safeguard your own health.

(3) Maintain scrupulous cleanliness at all times. Thoroughly wash hands and feet before taking meals.

(4) Wash off any chemical falling on your body with soap and water. If splashed with a solution of the chemical, remove the contaminated clothing immediately. These chemicals are known to produce cyanosis. Contact the medical officer or appointed doctor immediately and get his advice.

(5) Handle the dye intermediates only with long handled scoops, never with bare hands.

(6) Alcoholic drinks should be avoided as they enhance the risk of poisoning by the chemicals.

(7) Keep your food and drinks away from work place. Consuming food, drinks or tobacco in any form at the place of work is prohibited.

(8) Serious effects from work with toxic chemicals may follow after many years. Great care must be taken to maintain absolute cleanliness of body, clothes, machinery and equipment.

SCHEDULE VI(W)**[See rule 55]****OPERATIONS INVOLVING HIGH NOISE LEVELS**

1. Application — This Schedule shall apply to all operations in any manufacturing process having high noise level.

2. Definitions — For the purpose of this Schedule — (a) “noise” means any unwanted sound;

(b) “high noise level” means any noise level measured on the A-weighted scale is 90 db of above;

(c) “Decibel” means one-tenth of “Bel” which is the fundamental division of a logarithmic scale used to express the ratio of two specified or implied quantities, the number of “Bels” denoting such a ratio being, the logarithm to the base of 10 of this ratio. The noise level (or the sound pressure level) corresponds to a reference pressure of 20×10^{-6} newtons per square meter or 0.0002 dynes per square centimeter which is the threshold of hearing, that is the lowest sound pressure level necessary to produce the sensation of hearing in average healthy listeners. The decibel in abbreviated from is dB.

(d) “Frequency” is the rate of pressure variations expressed in cycle per second or hertz.

(e) “dBA” refers to sound level in decibels as measured on a sound level meter operating on the A-weighting network with slow meter response.

(f) “A-weighting” means making graded adjustments in the intensities of sound of various frequencies for the purpose of noise measurements, so that the sound pressure level measured by an instrument reflects the actual response of the human ear to the sound measured.

3. Protection against noise — (1) In every factory, suitable engineering control or administrative measures shall be taken to ensure, so far as is reasonably practicable, that no worker is exposed to sound levels exceeding the maximum permissible noise exposure levels specified in Tables 1 and 2.

TABLE 1

Permissible exposure in cases of continuous noise.

Total time of exposure (continuous or a number of short time exposures) per day in hours.	Sound pressure level in dBA
1	2
8	90
6	92
4	95
3	97
2	100
11/2	102
1	105
3/4	107
1/2	110
1/4	115

1. Notes — I.No. exposure in excess of 115 dBA is to be permitted.
2. For any period of exposure falling in between any figure and the next higher and lower figure as indicated in column 1, the permissible sound pressure level is to be determined by extrapolation on proportionate basis.

TABLE 2
Permissible exposure levels of impulsive or impact noise

Peak sound pressure level or impacts in db	Permitted number of impulses per day
1	2
140	100
135	315
130	100
125	3160
120	10,000

Notes - 1. No exposure in excess of 140 dB peak sound pressure level is permitted.

2. For any peak sound pressure level falling in between any figure and the next higher or lower figure as indicated in column 1, the permitted number of impulses or impacts per day is to be determined by extrapolation on a proportionate basis.

(2) For the purposes of this Schedule, if the variations in the noise level involve maxima at intervals of one second or less, the noise is to be considered as a continuous one and the criteria given in Table 1 would apply in other cases, the noise is to be considered as impulsive or impact noise and the criteria given in Table 2 would apply.

(3) When the daily exposure is composed of two or more periods of noise exposure at different levels their combined effect should be considered rather than the individual effect of each. The mixed exposure should be considered to exceed the limit value if the sum of the fractions.

$C_1/T_1 + C_2/T_2 + \dots + C_n/T_n$ exceeds unity

Where the C_1, C_2 etc. indicate the total time of actual exposure at a specified noise level and T_1, T_2 etc., denote the time of exposure permissible at that level. Noise exposure of less than 90 dBA may be ignored in the above calculation.

(4) Where it is not possible to reduce the noise exposure to the levels specified in sub-rule (1) by reasonably practicable engineering control or administrative measures, the noise exposure shall be reduced to the greatest extent feasible by such control measures, and each worker so exposed shall be provided with suitable ear protectors so as to reduce the exposure to noise the level specified in sub-rule (1).

(5) Where the ear protectors provided in accordance with sub-paragraph (4) and worn by a worker cannot still attenuate the noise reaching near his ear, as determined by subtracting the attenuation value in dBA of the ear protectors concerned from the measured sound pressure level, to a level permissible under Table 1 or Table 2 as the case may be, the noise exposure period shall be suitable reduced to correspond to the permissible noise exposure specified in subparagraph (1).

(6) In all cases where the prevailing sound levels exceed the permissible levels specified in sub-paragraph (1) there shall be administered an effective hearing conservation programme which shall include among other hearing conservation measures, pre-employment and periodical auditory surveys conducted on workers exposed to noise

exceeding the permissible levels, and rehabilitation of such workers either by reducing the exposure to the noise levels or by transferring them to place where noise levels are relatively less or by any other suitable means.

(7) Every workers employed in areas where the noise exceeds the maximum permissible exposure levels specified in sub-rule (1) shall be subjected to an auditory examination by a Medical Officer within 14 days of his first employment and there after, shall be re-examined at least once in every 12 months. Such initial and periodical examination shall include tests which the Medical Officer may consider appropriate, and shall include determination of auditory thresholds for pure tones of 125, 250, 500, 1000, 2000, 4000 and 8000 cycles per second.

SCHEDULE : VI(X)

[See rule 55]

MANUFACTURE OF RAYON BY VISCOSE PROCESS.

1. Definitions — For the purpose of this Schedule,—

(a) “approved” means approved for the time being in writing by the Chief Inspector-cum-facilitator;

(b) “breathing apparatus” means a helmet or face piece with necessary connections by means of which the person using it in a poisonous, asphyxiating or irritant atmosphere breathes unpolluted air; or any other approved apparatus;

(c) “churn” means the vessel in which alkali cellulose pulp is treated with carbon disulphide;

(d) “dumping” means transfer of cellulose xanthenes from a dry churn to a dissolver;

(e) “efficient exhaust draught” means localised ventilation by mechanical means for the removal of any gas or vapour, so as to prevent it from escaping into the air of any place in which work is carried on. No draught shall be deemed to be efficient if it fails to control effectively any gas or vapour generated at the point where such gas or fume originates;

(f) “fume process” means any process in which carbon disulphide or hydrogen sulphide is produced, used or given off;

(g) “life belt” means a belt made of leather or other suitable material which can be securely fastened round the body with a suitable length of rope attached to it, each of which is sufficiently strong to sustain the weight of a man;

(h) “protective equipment” means apron, goggles, face shields, foot wear, gloves and overalls made of suitable materials.

2 Ventilation— (1) In all workrooms where a fume process is carried on, adequate ventilation by natural or mechanical means shall be provided so as to control, in association with other control measures, the concentration of carbon disulphide and hydrogen sulphide in the air of every work environment within the permissible limits.

(2) Notwithstanding the requirements in sub-paragraph (1) an efficient exhaust draught shall be provided and maintained to control the concentration of carbon-sulphide and hydrogen sulphide in the air at the following locations—

(a) dumping hoppers of dry churns,

(b) spinning machines,

(c) trio rollers and cutters used in staple fibre spinning,

(d) hydro-extractors for yarn cakes,

(e) after treatment processes, and

(f) spin baths.

(3) In so far as the spinning machines and trio rollers and cutters used in staple fibre spinning are concerned, they shall be, for the purpose of ensuring the effectiveness of the exhaust draft to be provided as required in sub-paragraph (1) enclosed as fully practicable and provided with suitable shutters in sections to enable the required operations to be carried out without giving rise to undue quantities of carbon-disulphide and hydrogen sulphide to the work environment.

(4) No dry churn shall be opened after completion of reaction without initially exhausting the residual vapours of carbon-di-sulphide by operation of suitable and efficient arrangement for exhausting the vapour which shall be continued to be operated as long as the churn is kept opened.

(5) Whenever any ventilation apparatus normally required for the purpose of meeting the requirements in sub-paragraphs (2), (3) and (4) is ineffective, fails, or is stopped for any purpose whatsoever, all persons shall be required to leave the work areas where the equipment or process specified in the above said subparagraphs are in use, as soon as possible, and in any case not later than 15 minutes after such an occurrence.

(6) (a) All ventilating systems provided for the purpose as required in subparagraphs (2), (3) and (4) shall be examined and inspected once every week by a competent person once in every period of 12 months. Any defects found by such examinations or test shall be rectified forthwith.

(b) A register containing particulars of such examinations and tests, and the state of the systems and the repairs or alternations found to be necessary shall be kept and shall be available for inspection by an Inspector-cum-facilitator.

3. Waste from spinning machines — Waste yarn from the spinning machines shall be deposited in suitable containers provided with close fitting covers. Such waste shall be disposed off as quickly as possible after decontamination.

4. Lining of Dry churns— The inside surface of all dry churns shall be coated with a non-sticky paint so that cellulose xanthenes will not stick to the surface of the churn. Such coating shall be maintained in good condition.

5. Air monitoring— (1) To ensure the effectiveness of the control measures, monitoring of carbon-di-sulphide and hydrogen sulphide in air shall be carried out once at least in every shift and the record of the results so obtained shall be entered in a register specially maintained for the purposes.

(2) For the purpose of the requirement in sub-paragraph (1) instantaneous gas detector tubes shall not be used. Samples shall be collected over a duration of not less than 10 minutes and analysed by an approved method. The locations where such monitoring is to be done shall be as directed by the inspector. (3) If the concentration of either carbon disulphide or hydrogen sulphide exceeds the permissible limits for such vapour gas as laid down in **rule 128 of the Model Rule** suitable steps shall be taken for controlling the concentration in air of such contaminants. A report of such occurrences shall be sent to the Chief Inspector forthwith.

6. Prohibition to remain in fume process room — No person during his intervals for meal, or rest shall remain in any room where in fume process is carried on.

7. Prohibition relating to employment of young persons — No young person shall be employed or permitted to work in any fume process or in any room in which any such process is carried on.

8. Protective equipment— (1) The occupier shall provide and maintain in good condition protective equipment as specified in the Table for use of persons employed in the processes referred to therein.

TABLE

Process	Protective equipment
1	2
Dumping	Overalls, face shields, gloves and foot wear—all made of suitable material.
Spinning	Suitable aprons, gloves and foot wear.
Process involving or likely to involve contact with viscose solution	Suitable gloves and footwear,
Handling of sulphur	Suitable chemical goggles.
Any other process involving contact with hazardous chemicals	Protective equipment as may be directed by the Chief Inspector-cum-facilitator by an order in writing

(2) A suitable room, rooms or lockers shall be provided exclusively for the storage of all the protective equipment supplied to workers and no such equipment shall be stored at any place other than the room, rooms or lockers so provided.

9. Breathing apparatus— (1) There shall be provided in every factory where fume process is carried on, sufficient supply of —

- (a) breathing apparatus,
- (b) oxygen and a suitable appliances for its administration, and
- (c) life belts.

(2) (i) The breathing apparatus and other appliances referred to in subparagraph (1) shall be maintained in good condition and kept in appropriate locations so as to be readily available.

(ii) The breathing apparatus and other appliances referred to in clause (a) and (b) of subparagraph (1) shall be cleaned and disinfected at suitable intervals and thoroughly inspected once every month by a responsible person,

(iii) A record of the maintenance of the condition of the breathing apparatus and other appliances referred to in sub clause (1) shall be entered in a register provided for that purpose which shall be readily available for inspection by an Inspector.

(3) Sufficient number of workers shall be trained and periodically retrained in the use of breathing apparatus and administering artificial respiration so that at least two such trained persons would be available during all the working hours in each room in which fume processes is carried on.

(4) Breathing apparatus shall be kept properly labeled in clean, dry, light proof cabinets and if liable to be affected by fumes, shall be protected by placing them in suitable containers.

(5) No person shall be employed to perform any work specified in subparagraph (1) for which breathing apparatus is necessary to be provided under that sub-paragraph unless he has fully instructed in the proper use of that equipment.

(6) No breathing apparatus provided in pursuance of sub-paragraph (1) which has been worn by a person shall be worn by another person unless it had been thoroughly cleaned and disinfected since last being worn and the person has been fully instructed in the proper use of that equipment.

10. Electric fittings — All electric fittings in any room in which is produced, used or given off or is likely to be given off into the work environment, other than a spinning room, shall be of flame-proof construction and all electric conductors shall either be enclosed in metal conduits or be lead-sheathed.

11. Prohibition relating to smoking, etc. — No person shall smoke or carry matches, fire or naked light or other means of producing a naked light or spark in a room in which fume process is carried on. A notice in the language understood by the majority of the workers shall be posted in prominent locations in the plant prohibiting smoking and carrying of match fire or naked light or other means of producing naked light or spark into such rooms.

12. Washing and bathing facilities— (1) There shall be provided and maintained in a clean state and in good repair for the use of all workers employed in the process covered by the Schedule, adequate washing and bathing places having a constant supply of water under cover at the rate of one such places for every 25 persons employed.

(2) The washing places shall have stand pipes placed at intervals of not less than one metre.

(3) Not less than one half of the total number of washing places shall be provided with bathrooms.

(4) Sufficient supply of clean towels made of suitable material shall be provided.

(5) Sufficient supply of soap and nail brushes shall be provided.

13. Rest Room— (1) A rest room shall be provided for the workers engaged in doffing operations of filament yarn spinning process.

(2) Such rest room shall be provided with fresh air supply and adequate sitting arrangement.

14. Cautionary notice and instructions— (1) The following cautionary notice shall be prominently displayed in each fume process room

“CAUTIONARY NOTICE”

1. Carbon disulphide (CS₂) and Hydrogen Sulphide (H₂S) which may be present in this room are hazardous to health.

2. Follow safety instructions.

3. Use protective equipment and breathing apparatus as and when required.

4. Smoking is strictly prohibited in this area.

(1) This notice shall be in a language understood by the majority of the worker and displayed where it can be easily and conveniently read. If any worker is illiterate, effective steps shall be taken to explain carefully to him the contents of the notice so displayed.

(2) Arrangement shall be made to instruct each worker employed in any room in which a fume process is carried on regarding the health hazards connected with their work and the prevention measures and methods to protect themselves. Such instructions shall be given on his first employment and repeated periodically.

(3) Simple and special instructions shall be framed to ensure that effective measures will be carried out in case of emergency involving escape of carbon disulphide and hydrogen Sulphide. Those instructions shall be displayed in the concerned areas and workers shall be displayed and trained in the actions to be taken in such emergencies.

15. Medical facilities and records of examinations and tests — (1) The occupier of each factory to which this Schedule applies, shall—

(a) employ a qualified medical officer for medical surveillance of the workers employed in the fume process whose employment shall be subject to the approval of the Chief Inspector -cum-facilitator; and

(b) provided to the said medical officer all the necessary facilities for the purpose referred to in clause (a).

(2) The record of medical examination and appropriate tests carried out by the said medical officer shall be maintained in a separate register approved by the Chief Inspector -cum-facilitator, which shall be kept readily available for inspection by the Inspector.

16. Medical Examination by the **Medical officer** — (1) Every worker employed in the fume process shall be examined by a Medical Officer within 15 days of his first employment. Such examination shall include tests for estimation of exposure co-efficient and cholesterol, as well as electrocardiogram (EEG) and Central Nervous System (CNS) tests. No worker shall be allowed to work after 15 days of his first employment in the factory unless certified fit for such employment by the Medical Officer.

(2) Every worker employed in the fume process shall be re-examined by a Medical Officer at least once in every twelve calendar months. Such examination shall, whenever the Medical Officer considers appropriate, include all the tests as specified in sub-paragraph (1).

(3) The Medical Officer after examining a worker shall issue a certificate of fitness in **the prescribed format(I) hereinbelow**. The record of re-examinations carried out shall be entered in the certificate and the certificate shall be kept in the custody of the Manager of the factory. The record of each examination carried out under sub-paragraphs (1) and (2) including the nature and the results of the tests, shall also be entered by the **Medical officer** in a health register in **the prescribed format(II) hereinbelow**.

FORMAT(I) **Certificate of Fitness**

Serial Number:

I certify that I have personally examined (name) son
of (father's name) residing at (address)
who is desirous of being employed as (designation) in
(process, department and factory)
and that his age, as nearly as can be ascertained from any examination, is years, and that he is, in
my opinion, fit/unfit for employment in the above mentioned factory as mentioned above.

2. He may be produced for further examination after a period of

3. The serial number of the previous certificate is

Signature or left hand thumb impression
of person examined

Signature of Medical Officer

Date:

1	2	3	4
I certify that I have examined the persons mentioned above on	I extend this Certificate until (If Certificate is not extended, the period for which the worker is considered unfit for work is to be mentioned)	Signs and symptoms observed during examination	Signature of the Medical Officer.

FORMAT(II)

Health Register

(In respect of persons employed in occupations declared to be dangerous operations under Section 87) Name of Certifying Surgeon :

- (a) Mr..... From..... To
- (b) Mr..... From..... To
- (c) Mr..... From..... To

Serial No.	Works No.	Name of worker	Sex	Age (birth day)	Date of employment on present work	Date of leaving or transfer to other works	Reason for leaving, transfer or discharge	Nature of job or occupation	Raw material or by-product handled	Dates of Medical Examination by Certifying Surgeon					If suspended from work, state period of suspension with detailed reason	Recertified fit to resume duty on (with signature of Certifying Surgeon)	If certificate of unfitness or suspension issued to worker	Signature with date of Certifying Surgeon
1	2	3	4	5	6	7	8	9	10	11					12	13	14	15

Note — (i) Column 8. Detailed summary of reasons for transfer or discharge should be stated

(i) Column 11. should be expressed as fit/unfit/suspended.

(4) The Certificates of Fitness and the health register shall be kept readily available for inspection by the Inspector-cum-facilitator.

(5) If at any time the Medical Officer is of the opinion that a worker is no longer fit for employment in the fume process on the ground that continuance therein would involve special danger to the health of the worker, shall make a record of his findings in the said certificate and health register. The entry of his findings in those documents should also include the period for which he considers that the said person is unfit for work in the fume process.

(6) No person who has been found unfit to work as said in sub-paragraph (5) above shall be re-employed or permitted to work in the fume process unless the Medical officer, after further examination again certifies him fit for employment in such process.

17. Exemptions — If in respect of any factory the Chief Inspector-cum-facilitator is satisfied that owing to the exceptional circumstances or infrequency of the process or for any other reason, all or any of the provisions of this Schedule is not necessary for protection of the workers in the factory, the Chief Inspector-cum-facilitator may by a certificate in writing, which he/she may at his discretion revoke at any time, exempt such factory from all or any of such provisions subject to such conditions, if any, as he/she may specify therein.

SCHEDULE : VI(Y)

[See rule 55]

MANUFACTURE , STORING, HANDLING AND USE OF HIGHLY FLAMMABLE LIQUIDS AND FLAMMABLE COMPRESSED GASES.

1. Application — These rules will be applicable to all factories where highly flammable liquids or flammable compressed gases are manufactured, stored, handled or used.

2. Definition — For the purpose of this Schedule, — (a) “highly flammable liquid” means any liquid including its solution emulsion or suspension which when tested in a manner specified by Sections 14 and 15 of the Petroleum Act, 1934, (30 of 1934) gives off flammable vapours at a temperature less than 32 degrees centigrade,

(b) “Flammable compressed gas” means flammable compressed gas as defined in Section 2 of the Static and Mobile pressure vessels (unfired) Rules 1981 framed under the Explosives Act, 1884.

3. Storage — (1) Every flammable liquid or flammable compressed gas used in every factory shall be stored in suitable fixed storage tank or in suitable closed vessel located in a safe position under the ground, in the open or in a store room of adequate fire resistant construction.

(2) Except as necessary for use, operation or maintenance of every vessel or tank which contains or had contain a highly flammable liquid or flammable compressed gas shall be always kept closed and all reasonably practicable steps shall be taken to contain or immediately drain off to a suitable container any spill or leak that may occur.

(3) Every container vessel, tank, cylinder, or store room used for storing highly flammable compressed gas shall be clearly and in bold letters marked “Danger-Highly Flammable Liquid” or “ Danger-Flammable Compressed Gas”.

4. Enclosed systems for conveying highly flammable liquids — Whenever it is reasonably practicable, highly flammable liquids shall be conveyed within a factory in totally enclosed systems consisting of pipe lines, pumps and similar appliances from the storage tank or vessel to the point of use. Such enclosed systems shall be so designed installed operated and maintained as to avoid leakage or the risk of spilling.

5. Preventing Formation of Flammable Mixture with Air— Wherever there is a possibility, for leakage or spill of high flammable liquid or flammable compressed gas from an equipment, pipe line, valve, joint or other part of a system, all practicable measure shall be

taken to contain, drain off or dilute such spill or leakage as to prevent formation of flammable mixture with air.

6. Prevention of Ignition— (1) In every room, work place or other location where highly flammable liquid or flammable combustible gas is stored conveyed, handled or used or where there is danger of fire or explosion from accumulation of highly flammable liquid or flammable compressed gas in air, all practicable measure shall be taken to exclude the sources of ignition. Such precautions shall include the following —

(a) All electrical apparatus shall either be excluded from the area of risk or they shall be of such construction and so installed and maintained as to prevent the danger of their being a source of ignition;

(b) effective measure shall be adopted for prevention of accumulation of static charges to a dangerous extent;

(c) No person shall wear or be allowed to wear any foot wear having iron or steel nails or any other exposed ferrous materials which is likely to cause sparks by friction;

(d) Smoking, lighting or carrying of matches, lighters or smoking materials shall be prohibited;

(e) Transmission belts with iron fasteners shall not be used; and

(f) All other precautions as are reasonably practicable, shall be taken to prevent initiation of ignition from all other possible sources such as open flames, frictional sparks, overheated surfaces of machinery or plant, chemical or physical chemical reaction and radiant heat

7. Prohibition of smoking — No person shall smoke in any place where highly flammable liquid or flammable compressed gas is present in circumstances that smoking would give rise to a risk of fire. The occupier shall take all practicable measures to ensure compliance with this requirement including display of a bold notice indicating prohibition of smoking at every place where this requirement applies.

8. Fire Fighting — In every factory where highly flammable liquid or flammable compressed gas is manufactured, stored, handled or used, appropriate and adequate means of fighting a fire shall be provided. The adequacy and suitability of such means which expression includes the fixed and portable fire extinguishing systems, extinguishing material, procedures and the process of firefighting, shall be to the standards and levels prescribed by the Indian standards applicable, and in any case not inferior to the stipulations under **Model Rules 69**.

9. Exemptions — If in respect of any factory, the Chief Inspector-cum-facilitator is satisfied that owing to the exceptional circumstances or infrequency of the processes or for any other reason, all or any of the provisions of this Schedule is not necessary for protection of the workers in the factory, the Chief Inspector-cum-facilitator may by a certificate in writing, which he/she may at his discretion revoke at any time, exempt such factory from **all or any of such provisions subject to such conditions, if any, as he/she may specify therein.**

SCHEDULE VII**[See rule 57]****FORMAT MATERIAL SAFETY DATA SHEET****1. CHEMICAL IDENTITY**

Chemical Name	Chemical Classification
Symptoms	Trade Name

Formula	C.A.S. No.	U.N. No.
Shipping Name		
Codes Label	Hazchem No.	
Regulated Identification		
Hazardous Waste I.D. No.		
Hazardous Ingredients C.A.S. No.	Hazardous Ingredient C.A.S, No.	
1	3	
2	4	

2. PHYSICAL AND CHEMICAL DATA

Boiling Range/Point	°C	Physical State	Appearance
Melting/Freezing Point °C	Vapour at	Pressure	Odour
35° C	mm Hg		
Vapour Density (Air = 1)	Solubility in water at 30 °C		Others
Specific Gravity Water =1	PH		

3. FIRE AND EXPLOSION HAZARD DATA

Flammability Yes/No.	LEL	%	Flash Point	°C	Auto
ignition Temperature °C					
TDG Flammability	UEL	%	Flash Point	°C	
Explosion Sensitivity to Impact	Explosion Sensitivity to Static Electricity				Hazardous
Combustion Products					
Hazardous Polymerisation					
Combustible Liquid	Explosive Material				Corrosive
Material					
Flammable Material	Oxidiser				Others
Pyrophoric Material	Organic Peroxide				

4. REACTIVITY DATA

Chemical Stability
Incompatibility with other Material
Reactivity
Hazardous Reaction Products

5. HEALTH HAZARD DATA

Routes of Entry							
Effects of Exposure/ symptoms							
Emergency Treatment							
TLV (ACGIH)		ppm mg/m3				STEL ppm	
mg/m3							
Permissible Exposure Limit	LD	ppm	mg/m3	Odour LL	Thresoll	ppm	
mg/m3							
NFPA	Hazard	Health	Flammability	Stability	Special		
Signals							

6. PREVENTIVE MEASURES

Personnel Protective
Equipment
Handling and Storage
Precautions

7. EMERGENCY AND FIRST AID MEASURE

FIRE	EXTINGUISHING
FIRE	Special Procedures
Unusual Hazards	
EXPOSURE	First Aid Measures
Antidotes/Dosages	
SPILLS	Steps to be taken
Waste Disposal Method	

8. ADDITIONAL INFORMATION/REFERENCES

9. MANUFACTURER/SUPPLIERS DATA

	Name of Firm	Contact Person in Emergency	
	Mailing Address Telephone/Mobile Nos.	Local Bodies involved	
	Email Address	Standard Packing	
		Tremcard Details/Ref	

10. DISCLAIMER

Information contained in this material data sheet is believed to be reliable but no representation guarantee or warranties of any kind are made as to its accuracy, suitability for a particular application or results to be obtained from them. It is up to the manufacture/seller to ensure that the information contained in the material safety data sheet is relevant to the product manufactured/ handled or sold by him as the case may be. The Government makes no warranties expressed or implied in respect of the adequacy of this document for any particular purpose.

(2) Disclosure of information to workers—

(i) The occupier of a factory carrying on a 'hazardous process' shall supply to all workers the following information in relation to handling of Hazardous materials or substances in the manufacture, transportation, storage and other processes —

- (a) Requirements of Sections 84, 85 and 89 of the Code;
- (b) A list of 'Hazardous Processes carried on in the factory;
- (c) Location and availability of all Material Safety Data Sheets as per **rule 57**;
- (d) Physical and health hazards arising from the exposure to or handling of substances;
- (e) Measures taken by the occupier to ensure safety and control of physical and health hazards;
- (f) Measures to be taken by the workers to ensure safe handling storage and transportation of hazardous substances;
- (g) Meaning of various labels and markings used on the containers of hazardous substances as provided under **rule 57**;
- (h) Personal Protective Equipment required to be used by workers employed in 'hazardous process' or 'dangerous operation';
- (i) Signs and symptoms likely to be manifested on exposure to hazardous substances and to whom to report;
- (j) Measures to be taken by the workers in case of any spillage or leakage of a hazardous substances;

(k) Role of workers vis-a-vis the emergency plan of the factory, in particular the evacuation procedures; (l) Any other information considered necessary by the occupier to ensure safety and health of workers.

(ii) The information required by sub-rule (i) shall be compiled and made known to workers individually through supply of booklets or leaflets and display of cautionary notices at the work places.

(iii) The booklets, leaflets, and the cautionary notices displayed in the factory shall be in the language understood by the majority of the workers, and also explain to them.

(iv) The Chief Inspector-cum-facilitator may direct the occupier to supply further information to the workers as deemed necessary.

(a) -----

(b) ----- } Matter not printed in original Gazette

(c) ----- }

(d) a statement on resources and facilities available for dealing with an emergency including any agreement entered into with a neighbouring factory for aid and assistance in the event of an emergency; (e) a map of the area showing the approaches to the factory location of emergency facilities such as hospitals, police and fire service;

(f) the organisation of the management and the responsibility for safety indicating therein the persons responsible for on-site emergency action;

(g) details relating to alert system;

(h) information on availability of antidotes for poisoning resulting from an accident;

(i) any other information as may be considered relevant by the occupier or asked for by the District Emergency Authority.

(3) Disclosure of information to the Chief Inspector —

The occupier of every factory carrying on "Hazardous Process" shall furnish in writing, to the Chief Inspector, a copy of all information furnished to the workers.

(4) Information on industrial waste —

The information furnished under **rules 57 (1) and 57 (2)** shall include the quantity of the solid and liquid wastes generated per day, their characteristics and the method of treatment such as incineration of solid wastes, chemical and biological treatment of liquid wastes, and arrangements for their final disposal.

(5) The occupier shall review once in every calendar year and modify, if necessary, the information furnished under **rules 57 (1) and 57 (2)** to the workers and Chief Inspector-cum-facilitator.

(6) Confidentiality of information — The occupier of a factory carrying on "Hazardous Process" shall disclose all information needed for protecting Safety and Health of the workers to

(a) his workers; and

(b) Chief Inspector-cum-facilitator as required under **rules 57 (1) and 57 (2)**. If the occupier is of the opinion that the disclosure of details regarding the process and formulations will adversely affect his business interests, he/she may make a representation to the Chief Inspector-cum-facilitator stating the reasons for with-holding such information. The Chief Inspector-cum-facilitator shall give an opportunity to the occupier of being heard and pass an order on the representation. An occupier aggrieved by an order of the Chief Inspector-cum-facilitator may prefer an appeal before the State Government within a period of 30 days. The State Government shall give an opportunity to the occupier of being heard and pass an order. The order of the State Government shall be final.

SCHEDULE VIII
[See rules 63(2)(b)(i) and 63(2)(c)(ii)]

EQUIPMENT FOR OCCUPATIONAL HEALTH CENTRE IN FACTORIES

1. A glazed sink with hot and cold water always available.
2. A table with a smooth top at least 180 cm x 105 cm.
3. Means for sterilizing instruments.
4. A couch.
5. Two buckets or containers with close fitting lids.
6. A kettle and spirit stove or other suitable means of boiling water.
7. One bottle of spiritus ammoniac aromations (120) ml.
8. Two medium size sponges.
9. Two 'kidney' trays.
10. Four cakes of toilet, preferable antiseptic soap.
11. Two glass tumblers and two wine glasses.
12. Two clinical thermometers.
13. Two tea spoons.
14. Two graduated (120 ml.) measuring glasses.
15. One wash bottle (100 cc) for washing eyes.
16. One bottle (one litre) carbolic lotion 1 in 20.
17. Three chairs.
18. One screen.
19. One electric hand torch.
20. An adequate supply of tetanus toxoid.
21. Coramine liquid (60 ml.).
22. Tablets — antihistaminic, antispasmodic (25 each).
23. Syringes with needles — 2 cc, 5 cc and 10 cc.
24. Two needle holders, big and small.
25. Suturing needles and materials.
26. One dissecting forceps.
27. One dressing forceps.
28. One scalpels.
29. One stethoscope.
30. Rubber bandage — pressure bandage.
31. Oxygen cylinder with necessary attachments.
32. One Blood pressure apparatus.
33. One patellar Hammer.
34. One peak-flow meter for lung function measurement.
35. One stomach wash set.
36. Any other equipment recommended by the Factory Medical Officer according to specific need relating to manufacturing process.

37. In addition —

(1) For factories employing 51 to 200 workers —

1. Four plain wooden splints 900 mm x 100 mm x 6 mm.
2. Four plain wooden splints 350 mm x 75 mm x 6 mm.
3. Two plain wooden splints 250 mm x 50 mm x 12 mm.
4. One pair artery forceps.
5. Injections - morphia, pethidine, atropine, adrenaline, coramine, novacan (2 each).
6. One surgical scissors.

(2) For factories employing above 200 workers —

1. Eight plain wooden splints 900 mm x 100 mm x 6 mm.
2. Eight plain wooden splints 350 mm x 75 mm x 6 mm.
3. Four plain -wooden splints 250 mm x 50 mm x 12 mm.
4. Two pairs artery forceps
5. Injections - morphia, pethidine, atropine, adrenaline, ceramine, novacan (4 each).
6. Two surgical scissors

(6) Ambulance Van—

(i) In any factory carrying on "hazardous process", there shall be provided and maintained in good condition, a suitably constructed ambulance van equipped with items as per clause (ii) and manned by a fulltime Driver-cum-Mechanic and a Helper trained in first-aid, for the purposes of transportation of serious cases of accidents or sickness. The ambulance van shall not be used for any purpose other than the purpose stipulated herein and will normally be stationed at or near to the Occupational Health Centre: Provided that a factory employing less than 200 workers, may make arrangements for procuring such facility at short notice from nearby hospital or other places to meet any emergency.

(ii) The Ambulance should have the following equipments —

(a) General A wheeled stretcher with folding and adjusting devices with the head of the stretcher capable of being tilted upward : Fixed suction unit with equipment. Fixed oxygen supply with equipment; Pillow with case; Sheets blankets; Towels; Emesis bag; Bed pan - Urinal - Class.

(b) Safety equipment, Flares with life of 30 minutes; - Flood lights; Flash lights; Fire extinguisher dry powder type; Insulated gauntlets.

(c) Emergency care equipments.

(i) Resuscitation: — Portable suction unit; portable oxygen units; — Beg - valve - mask, hand operated artificial ventilation unit; — Airways; - Mouth gags; - Tracheostomy admonitors; — Short spine board; - I.V. Fluids with administration unit; — B.P. manometer ; - cugg; - Stethoscope,

(ii) Immobilization. — Long & short padded boards; - wire ladder splints; — Triangular bandage; - Long and short spine boards,

(iii) Dressings. — Gauze pads - 4" x 4"; - Universal dressing 10"x36"; — Roll of aluminium foils; - soft roller bandages 6" x 5 yards); — Adhesive tape in 3" roll; - Safety pins; — Bandage sheets; - Burn sheet.

(iv) Poisoning. — Syrup of Ipecac; - Activated Charcoal pre packeted in doses; - — snake bite kit; — Drinking water.

(v) Emergency Medicines — As per requirement (under the advice of Medical Officer only).

(7) W. Decontamination facilities:

In every factory, carrying out 'hazardous process' the following provisions shall be made to meet emergency -

(a) fully equipped first aid box;

(b) readily accessible means of water for washing by workers as well as drenching the clothing of workers who have been contaminated with hazardous and corrosive substance; and such means shall be as per the scale shown in the Table below :

No. of persons employed at any time	No. of drenching showers
(i) Upto 50 workers	2
(ii) Between 51 to 200 workers	2 + 1 for every additional 50 or part thereof.
(iii) Between 201 to 500 workers	5 + 1 for every additional 100 or part thereof.
(iv) 501 workers and above	8 + 1 for every additional 200 or part thereof.

(c) a sufficient number of eye wash bottles filled with distilled water or suitable liquid, kept in boxes or cupboards conveniently situated and clearly indicated by a distinctive sign which shall be visible at all times.

SCHEDULE IX

[See rule 66]

PERMISSIBLE LEVELS OF CERTAIN CHEMICAL
SUBSTANCES IN WORK ENVIRONMENT

		Permissible limits of				
Serial No.	Substance	Exposed Time-weighted average concentration (TWA) (8 hrs)	Short-term exposure limit (STEL) (15 min)			
		ppm	Mg/m³	ppm	Mg/m³	
1	2	3	4	5	6	
1.	Acetaldehyde	100	100	150	270	
2.	Acetic acid	10	25	15	37	
3.	Acetone	750	1780	1000	2375	
4.	Acrelein	0.1	0.25	0.3	0.8	
5.	Acrylonitrile-Skin(S.C.)	2	4.5	-	-	
6.	Aldrin-skin	-	0.25	-	-	
7.	Allychloride	1	3	2	6	
8.	Ammonia	0.25	18	35	27	
9.	Aniline-Skin	2	10	5	20	
10.	Anisidine (o-plisnoers)-Skin	0.1	0.5	-	-	
11.	Arsenic & soluble compounds (as As)	-	0.2	-	-	
12.	Benzene (HC)	05	1.5	25	7.5	
13.	Beryllium & Compound (as (Be) (S.C.)	-	0.002	-	-	
14.	Boron trifluoride -C	0.1	0.3	-	-	
15.	Bromine	0.1	0.7	0.3	2	
16.	Butane	800	1900	-	-	
17.	2-Butane (Methyl-ethyl Ketone-MEK)	200	590	300	885	
18.	n-Butyl acetate	150	710	200	950	
19.	n-Butylealcohol-Skin-C	50	150	-	-	
20.	Sec/tert. Butylacetate	200	950	-	-	
21.	Butylemercaptan	0.5	1.5	-	-	
22.	Cadmium Dusts and salts (as Cd)	-	0.05	-	0.21	
23.	Calcium Oxide	-	2	-	-	
1	2		3	4	5	6
24	Carbaryl (Sevin)		-	5	-	10
25	Carbofuran(Furadan)		-	0.1	-	-
26	Carbon disulphade-Skin		10	30	-	-
27	Carbon monoxide		50	55	400	440
28	Carbon tetrachloride-Skin(S.C.)		m5	30	-	-
29	Chlordane Skin		-	0.5	-	2
30	Chlorine		1	3	3	9
31	Chlorobenzene (Monochlorobenzene)		75	350	-	-

32	Chloroform(S.C.)	10	50	-	-
33	Bis(Chloromethyl) ether(H.C.)	0.001	0.005	-	-
34	Chromic acid and Chromates (as Cr) (water soluble)	-	0.05	-	-
35	Chromous salts(as Cr)	-	0.05	-	-
36	Copper Fume	0.2	-	-	-
37	Cotton dust, raw*	-	0.2*	-	0.6
38	Cresol, all isomers-Skin	5	22	-	-
39	Cyanides (as CN) Skin	-	5	-	-
40	Cyanogen	10	20	-	-
41	DDT(Dichlorodiphenyltrichloroethane)	-	1	-	3
42	Demeton-Skin	0.01	0.1	-	-
43	Diazinon-Skin	-	0.1	-	0.3
44	Dibutyl phthalate	-	5	-	10
45	Dichlorvos(DDVP)-Skin	0.1	1	0.3	3
46	Dieldrin-Skin	-	-	0.25	0.75
47	Dinitrobenzene(all isomers)-Skin	0.15	1	0.5	0.3
48	Dinitrotoluene-Skin	-	1.5	-	5
49	Diphenyl-(Biphenyl)	0.2	1.5	-	-
50	Endosulfan (Thiodan)-Skin	-	0.1	-	0.4
51	Endrin-Skin	-	0.1	-	0.3
52	Ethyl acetate	400	1400	-	-
53	Ethyl alcohol	-	1000	1900	-
54	Ethylamine	10	18	-	-
55	Fluorides(as F)	-	2.5	-	-
56	Fluorine	-	2	2	4
57	Formaldehyde(S.C.)	1.0	1.5	2	3
58	Formic acid	5	9	-	-
59	Gasoline	300	900	500	1500
60	Hydrazine Skin(S.C.)	0.1	0.1	-	-
61	Hydrogen chloride C	5	7	-	-
62	Hydrogen cyanide Skin C	10	10	-	-

*Lint-free dust as measured by the vertical clutricator cotton-dust sampler.

1	2	3	4	5	6
63	Hydrogen Flouride (as F) C	3	2.5	6	5
64	Hydrogen Peroxide	1	1.5	2	3
65	Hydrogen sulphide	10	14	15	21
66	Iodine-C	0.1	1	-	-
67	Iron-Oxide Fume (Fe ₂ O ₃) (as Fe)	-	5	-	10
68	Isoamyl acetate	100	525	125	655
69	Isoamyl alcohol	100	300	125	4500
70	Isobutyl alcohol	50	150	75	225
71	Lead, inorg. dusts and fumes (as Pb)	-	0.15	-	045
72	Lindane-Skin	-	0.5	-	1.5
73	Malathion-Skin	-	10	-	--
74	Manganese Dust and Compounds (as Mn) C	-	5	-	-
75	Manganese Fume (as Mn)	-	1	-	0.03
76	Mercury (as Hg) Skin	-	-	-	-
	(i) Alkyl Compounds	-	0.01	-	0.03
	(ii) All Forms expect alkyl vapour	-	0.05	-	-

	(iii) Aryl and inorganic compounds	-	0.1	-	-
77	Methyl Alcohol (Methanol) Skin	200	260	250	310
78	Methyl Cellosolve (2-Methoxy-ethanol) Skin	5	16	-	-
79	Methyl isobutyl ketone	50	205	75	300
80	Methyl isocyanate- Skin	0.02	0.05	-	-
81	Naphthalene	10	50	15	75
82	Nickel carbonyl (as Ni)	0.05	0.35	-	-
83	Nitric acid	2	5	4	10
84	Nitric Oxide	25	30	-	-
85	Nitrobenzene- Skin	1	5	-	-
86	Nitrogen dioxide	3	6	5	10
87	Oil-Mist Mineral	-	5	-	10
88	Ozone	0.1	0.2	0.3	0.6
89	Parathion-Skin	-	0.1	-	-
90	Phenol-Skin	5	19	-	-
91	Phorate (Thimet) Skin	-	0.05	-	0.2
92	Phosgene (Carbonyl chloride)	0.1	0.4	-	-
93	Phosphine	0.3	0.4	1	1
94	Phosphoric Acid	-	1	-	3
95	Phosphorous (Yellow)	-	0.1	-	-
96	Phosphorous pentachloride	0.1	1	-	-
97	Phosphorous trichloride	0.2	1.5	0.5	3
98	Picric acid-Skin	-	0.1	-	0.3
99	Pyridine	5	15	-	-
100	Silane (Silicon tetrahydride)	5	7	-	-

1	2	3	4	5	6
101.	Sodium hydroxide-C	-	2	-	-
102.	Styrene, monomer (Phenylethylene)	50	215	100	425
103.	Sulphur dioxide	2	5	5	10
104.	Sulphur hexafluoride	1000	6000	-	-
105.	Sulphuric acid	-	1	-	-
106.	Tetraethyl lead (as Pb)-Skin	-	0.1	-	-
107.	Toluene(Toluol)	100	375	150	560
108.	o-Toluidinz-Skin(S.C)	2	9	-	-
109.	Tributyl phosphate	0.2	2.5	0.4	5
110.	Trichloroehtylene	50	270	200	080
111.	Uranium, natural (as U)	-	0.2	-	0.5
112.	Vinyl chloride(H.C)	5	10	-	-
113.	Welding fumes	-	5	-	-
114.	Xylene(o-,m-,p-isomers)	100	435	150	650
115.	Zinc oxide				
	(i)Fume	-	5.0	-	10
	(ii)Dust(Total dust)	-	10.0	-	-
116.	Zirconium compounds(as Zr)	-	5	-	10

ppm Parts of vapour or gas per million parts of contaminated air by volume at 25C and 760mm of Hg. Mg/m³ milligram of substance per cubic metre of air.

* Not more than 4 times a day with atleast 60 min. interval between successive exposures.

** mg/m³= $\frac{\text{Molecular weight} \times \text{ppm}}{24.45}$

C denotes ceiling limit.

Skin denotes potential contribution to the overall exposure by the cutaneous route including mucous membranes and eye.

S.C. denotes Suspected Human Carcinogen

H.C. denotes Confirmed Human Carcinogen

Substance	Permissible time-weighted average concentration(TWA) (8 hours)
-----------	--

Silica, SiO₂

(a) Crystalline

(b) Quartz

1. In term of dusts count	$\frac{10600}{\% \text{ Quartz} + 10}$	mppcm
---------------------------	--	-------

1. In terms of respirable dust	$\frac{10}{\% \text{ respirable Quartz} + 2}$	Mg/m ³
--------------------------------	---	-------------------

(3) In terms of total dust 10mg/m³

%Quartz+3

(ii) Cristobalite

Half the limits given against quartz

(iii) Tridymite

Half the limits against quartz

(iv) Silica, fused

Same limits as for quartz

(v) Tripoli

Same limits as in formula in item (2) given against quartz

(b) Amorphous Silica [Asbestos (H.C.)]

10mg/ m³ · Total Dust

(a) Amosite

0.5 fibre/cc

(b) Chrysotile

1.0 fibre/cc

(c) Crocidolite

0.2 fibre/cc

(i) For fibres greater than 5 µm in length and less than 5 µm in breadth with length to breadth ratio equal to or greater than 3:1

(ii) As determined by the membrane filter method at 4000-450x magnification (4mm objective) phase contrast illumination.]

Portland cement

10 mg/m³, Total dust containing less than 1% quartz.

Coal Dust

2 mg/m³, respirable dust fraction containing less than 5% quartz

Mppcm – Million particles per cubic metre of air based on impinger samples counted by light field techniques.

*As determined by the membrane-filter method at 400 -450 magnification (4mm objective) phase illumination.

Respirable Dust:**Fraction passing a size-selector with the following characteristics:-**

Aerodynamic Diameter (um) (Unit density sphere)	% passing sector
<2	90
2.5	75
3.5	50
5.0	25
10	0]

(2) The State Government may, at any time, for the purpose of giving effect to any scientific proof obtained from specialised institutions or experts in the field by notification in the Official Gazette, make suitable changes in the said Schedule.

SCHEDULE X
[See rule 68(1)]

List of persons to hold position of supervision or management in factories

1. Managers.
2. Assistant Managers.
3. Engineers.
4. Foremen.
5. Weaving Master and Spinning Master in Textile Mills.
6. Head Electricians.
7. Supervisors and Instructors

(2) Persons defined to hold confidential position —

All time keepers employed in a factory within the meaning of sub-section (zzl) of Section 2 shall be deemed to be employed in a confidential position in the factory.

(3) List to be maintained of persons holding confidential position or position of supervision or management —

A List showing the names and the designations of all persons to whom the provision of sub-section (1) of Section 91 have been applied shall be maintained in every factory.

J. B. EKKA,
Principal Secretary to the Government of Assam,
Labour Welfare Department.